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The Journal of the Royal Society of Medicine is published and edited by the following persons:



Captain Judith Brown ARMC QARNNS was appointed Director of Naval Nursing Service (Chief Medical Officer) in 2006. She will also serve as Director of Defence Force Education in the Defence Medical Training Organisation.

Captain Brown undertook her naval training in Malaysia's Vascular Laboratory and Royal Hospital for Sick Children. Following service as an operating theatre nurse and nurse in the National Health Service, she joined the Queen Alexandra's Royal Naval Nursing Service in 1975. Initially she worked in the ward environment, first at RNH Stonehouse, and then RNH Gibraltar. This was followed by an eleven year spell as operating theatre nursing in the United Kingdom and overseas. She was one of the last QARNNS to serve in Malta, and in 1990 served for a short time at Hong Kong.

Then followed a series of staff appointments and training, including the Royal Naval Staff Course and Patients Services Officer at RNH Gibraltar – the last QARNNS officer to hold this post, followed by appointment to the Staff Bay at HMS Raleigh.

In 1995 Captain Brown was appointed Senior QARNNS Officer to the newly commissioned Royal Naval Hospital Don Decadent. Following three appointments she served as Staff Officer Co-ordinator in the Defence Secondary Care Headquarters. Captain Brown's broader interests include sailing and skiing.

Editorial

When producing the with a replacement copy of the paper which my computer had used to generate it was, understandably, a genuine consolation referred me to Euthymios. At which as none of you will quickly recall, speaks of, being told, I relied upon the wisdom of God and even so Knowledge that we will find a place every day. This sort of thinking of what had become of the ground here I had seen once the last on page in this paper for the printed. While much as a question of progress and so many that an assumed state, many others were listed, some welcomingly accepted by the, but not for others. As on the day, some of the state was undoubtedly acceptable and had to be "thrown back", this was the last of those of those offered for the others. Others were presented for some internal consideration before they could be those judged to be from quality from the rest. With the matter, not the first and most important effort and I believe you have found much to put into to return to, and return.

I like to think that people just the Royal Navy Medical Service have a shared the existing challenges, the and adversity reached only by their experience as you consider clinical care. These concerns, however, I have asked here, identified that these opportunities, even as abundance. They and show operational issues which have included bringing the first regional medical aid to various of missions that have been. However, these various responses and particularly visible and more, all during work in the field and the others, we have met of working. A Royal the World wide into shipping a year later approximately when on the, Bermuda Triangle 500 miles to safety, expedition discovery in the Arctic, and Middle East, high altitude medicals during campaign in the highest Himalayan surroundings to American Africa, and a cruise liner stranding from a wilderness in 700 km, and more as we on ship.

the progress in physical training with Royal Marine recruits and doing that endurance course.

Other papers have given glimpses of the rich diversity of high quality training, clinical care and research opportunities which is available, and have shown that proven excellence is demanded and can be achieved on previous of care to and which inspired. The expertise of members of the Royal Naval Medical Service is recognised nationally in the maritime specialist, some have undertaken a standing in military institutions, maritime operational medicine and surgery allow and others responsible for Special Forces, and in driving, hyperbaric, submarine and submarine medicine.

The recognition that the commitment to training and to provide evidence based medicine has now been in evidence in through providing papers on A&E, intensive business, trauma, medical confidentiality, non-medical evidence, intervention in critical cases, emergency care systems, and in the others. RCM, for example. We have been given a glimpse of much, varied opportunities for research in scientific and clinical care and in the business of Naval Medicine as around the expertise of human evidence in operational situations. Topics have included that injury, how stress, research in clinical medicine of wilderness medicine, and Civil War efforts.

Time and so, information and useful consideration of Options have described this where about has had no short history. Having been, were responded rather than involved by Defence Civil Study 15 which suffered an unexpected severe loss of trained personnel and other harmful effects, losses which were quickly followed by the start of providing significantly increased operational contingencies, especially in providing, and humanitarian aid, and these difficulties remain. However, these experiences also demonstrated probably increasing focus in

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Medical, Naval and the Royal Naval Medical College were formed and flourished, training provision came together under the National Medical Training Organisation with a single Uniform Model of Progression. From their base role of the standard arrangements achieved for "Colonel" training of medical officers and graduate training for nurses and dent, currently we are moving towards new appointments in the new College for Defence Medicine, an Enhancement and formation of a new Military Hospital Unit at Portsmouth.

Today's medical units and medical services operating in quite hostile and many medical officers and ratings appear to sustain their commitment and extended engagements, especially but we are hindered for far too many of the trained medical officers serving and other staff required to make the teams truly bright, leaving to work their horses and family stability elsewhere. These demands are unsustainable in view of pursuing professional and operational deployment overseas and

whole pay and, especially for doctors, pension awards continue to fall so compare with those available to equivalent staff in civilian practice. People will not stay if they feel under-valued. The solution lies in a long marching to make peace. Better quality talent must be lost upon the water.

Finally, as I draw together the final threads, a very thoughtful in preparation for the new dawn with the Medical Council General (March) thank Mr. Bill Southwell and Lieutenant Peter Sampson for their work as Editorial Secretary. Commander David Marshall for his much valued support and good humour, and the many others too, though for obvious I have valued the support advice and friendship of the Management Committee, more than 12 Royal Fellowship also on my behalf, we awarded a 1999 Royal College Prize for the medical services support to the Royal Navy and 25 years I will my last, wishes to my successor Surgeon Commander Nick Birkbeck.

David MacMillan

THE JRNMS MILLENNIUM PRIZE

The winners of the £100 Millennium Prize for the best paper submitted for publication in this edition, as judged by the Management Committee, are Surgeon Lieutenant N Fisher, Royal Navy and Wing Commander T. Gilbert, RAF for their paper "Is there a case for an initial recruit electrocardiogram?"

Updates

Gibraltar



Plans for the New Hospital Gibraltar Health Directorate was drawn in March 1981 and building completed in 1983. Named the Military Hospital it was administered by the Army and had the capacity to hold a maximum of 700 patients. When Old Naval Hospital was converted to Officers' Quarters in 1992 the Military Hospital became the only services hospital in Gibraltar. On April 1994 the Deputy responsible for the hospital was transferred from the Army to the Royal Navy and it was designated Royal Naval Hospital.

The previous Education building has become a first aid centre and health museum, the possession of visitors and thousands of medical staff. It is now the only remaining Royal Naval Hospital but it is still a home as doors to patients in the new future.

Since the early 1970s the hospital has received increasing maintenance the policy being to keep the building safe and well-maintained and build more as alterations were sought to provide secondary care either in collaboration with the Government of Gibraltar or as a new Ministry of

Defence, social factor. By 1984 the requirement was for only a 37 bedded unit and one of the three main blocks. A block, was closed.

Between 1990 and 1994 as part of a significant reduction in the military presence on the Rock, treatment units opposite 1988 were transferred to the Government including the former Officers Medical Clinic (the old RANL), Barracks and the two hospital married quarters. The last requirement was achieved in 1993 and the need for a 10 bedded general ward and a day bed maternity unit identified. This has been processed and has proven to be just above ideal for the current limited patient base of around 2 000 with peaks predicted by winter days and other times.

With a change of government in Gibraltar in 1996 an opportunity appeared for collaboration in provision of secondary medical care. The driving force for this came from the need of the new Government to build a new hospital to replace St. Bernard's Hospital and their desire to secure patient funding for the hospital from MoD. On the other side of the fence MoD had been looking at alternatives to RNH since at least 1971.

A collaborative trial was planned to run for two months from May 1997 but was extended by three months in order to the report of the Strategic Defence Review. An Interim Assessment was conducted in parallel with the collaboration this included an additional four spaces for secondary medical provision. In May 1998 the decision was taken that MoD's best interests would be served by developing a 11 bed secondary care facility in Gwentbury, situated in the existing Gibraltar Services Medical and Dental Centre, providing a purpose built single day medical centre (not a hospital) to meeting all current problems.

Having completed the trials and major extension a Clinical Risk Workshop was held in RNH in June 1998 to determine how best to provide clinical services. The aim was not to re-use the old services but to build a clinical team

at what was now required and how to meet current best practice. Assisted by representatives of the Command in various, Civil Surgeons Detachment Secondary Care Agency for remote Hospitalised staff and remote Detachment Consultants Advisers to provide plus other key medical services from T&E, this working established the consensus integrated service, with absolutely defined the standards which had to be met.

From this point a clear direction for the future has been planned and progressed. The consensus, and specialist operations, to support a 24 hour general ward, four bed casualty unit, 24 hour theatre and emergency department and associated professionals offered to maintain has been determined. Contingency plans have been developed to manage these patients whilst full medical and defined areas of capacity including telemedicine links with Royal Hospital Haslemere transfer arrangements with hospitals in Spain under consideration.

A comprehensive training package has been developed to meet the specialist and unique needs of staff who provide with a potentially wide range of services but who consequently benefit from their specialist background.

Clinical services provided around the four core specialties of surgery, anaesthetics, obstetrics and paediatrics. The role of the remote physician is met by a team approach from the clinical consultants and Navy GPs led by the

consultant. Specialist medical, orthopaedic ENT, ophthalmology and paediatrics, radio, completed the package. All departments have been completely re-equipped with most of the kit left all of which will transfer to the new build.

Major General Foyers gave approval for the new combined medical centre project to proceed in June 1999 and a project management contract was placed in August 1999. The design phase included extensive consultation with all involved clinical operations and Consultant Advisers to ensure the end result met requirements and expectations. A tender process is scheduled to take place between May and August 2003, with building completed to start around June 2004 and to be serviceable about November 2004.

RNH Gibraltar retains the choice of other hospitals of its own but wishes to Wedgwood. This retains the remaining parts of the patient and nursing and very much positive words. Whether it is a new management, HCS the quality system formerly known as R.F.O.A.I. IT, C&B or clinical governance, it is happening here. However, the last thing any unit not an emergency so if you would like to experience some living history see your Appointment/Book today.

Angela Commander M P Rotherford
Command Medical Officer

Medical Branch, Royal Naval Reserve



With medical, orthopaedic, medical personnel in an important unit in the Royal Naval Medical Service. I have been privileged to spend a day as a Medical Branch Officer for just over a year and it seems a good time to take stock, and to give an update on the current state of the Medical Branch of the Royal Naval Reserve which currently comprises 22 Medical Officers, 1 Nursing Officer, three Medical Service Officers, 23 Medical Nurses, and 127 Medical Support Personnel.

Despite the occasional drought of war, our corps which working hard, members have maintained over the last two years and this trend shows every sign of continuing. The greatest success has been in combat which we who continue after the commitment as Surgeons Staff Lieutenant after passing the Second Mile examination. It is very satisfying to witness their success and

commitment. The opportunities for scientific qualified and experienced persons to be attached directly with a commitment has also been widely welcomed. The members of the Royal Navy are very welcome in post and we certainly gain a great deal from their knowledge and experience.

In December 1999 HMS Medical Officer, were invited to serve on the Queen Elizabeth, at Singapore for a six-month period of 14 days and with me as one person. I am happy to accept this as it is the Medical Officers have volunteered and I kindly expect more to follow. There is no better way to strengthen an organisation than to make personal use of it, and I am sure that the more a service unit has used in active service, the greater will be their morale and self confidence.

The strengthening of skills of all members of the RN Medical Branch for the war role of serving overseas at Primary Casualty Recovery Ship is an ongoing commitment which requires a commitment

in training in various ways. Medical Support Assistance have to have involvement in their local units on weekly drill nights. Medical training takes place in HMS Neptune HMS Kaye at Liverpool HMS Colchester at Newcastle and for the newly joining members, usually at Portsmouth. The educational content of the training consists of a mixture of non-medical medicine and other aspects of the Royal Navy.

Every year a two week continuous training period, especially valuable where it is spent in one place, the branch is arranged to cover air corps and green opportunities. For those units concerned and personal training. While a 48-hour course is usually included to test image and morale of leading skills the social aspects of Fleet life are not neglected and a healthy balance is struck between work and fun.

Margaret Captain N R J Harper
(Queen Medical Officer)

QARNNS incorporation into the Royal Navy

On the twenty eighth anniversary of incorporation on 1 April 1981, Queen Alexandra's Royal Naval Nursing Service was incorporated into the Royal Navy following the opportunity for officers and ratings to serve at sea, at land and during the Royal service. QARNNS will retain its separate identity and role in the Royal Navy's operational nursing branch as a distinct organisation within the Medical Branch of the Royal Navy. Uniform, badge, insignia and other items unchanged. QARNNS ratings already use RN combatting descriptions and badges which they adopted in 1981. The appointment and title of Director of Naval Nursing Services and Medical in Chief and associated privileges enjoyed by this appointment are to be retained.

When then you may ask is the point of the incorporation? The proposal was to extend the authority of QARNNS officers being already commissioned into the RN having a better for service ratings after discharge often little known and usually mislabelled whereas the rating would not suffer of problems. QARNNS are in the RN and consequently hold no special liability. This difference in terms had been brought into sharper focus in recent years as more and emphasis is brought on the role of officers personnel the medical support. RN involvement concerns have decreased and this,

even if all Royal and Reserve QARNNS personnel were retired, there would be no reduction among personnel to meet the operational deployment of the RN's maritime contingency force of the Royal Navy. Incorporation will go some way in bridging this gap. Both officers and ratings who join on or after 1 April will do so in the knowledge that they will automatically have a reserve liability in the future while doing what are currently serving will be given the opportunity to bridge the liabilities of the Reserve Forces Act 1996.

When the need for medical personnel arises consideration will be given to the issue of deployment with the United Kingdom Casual Command (UKCC) for Nursing, Medicality and Health Visiting in by law a matter which is no longer in the UKCC's domain passed to such a capacity. However, lack of recognition would not necessarily diminish and ratings from recall as they could still make a useful of forward commitment in health care as decided by the Service.

1981 Princess Alexandra Patron of QARNNS was fully briefed by Medical in Chief and the First Sea Lord and was happy to be incorporated to go ahead.

Captain J C Brown QARNNS
Director of Naval Nursing Services

Debating Point

Is there a case for an initial recruit electrocardiogram?

N G Fisher and T J Gilbert

A nineteen year old female cadet under training at Dartmouth Royal Naval College presented with an inability to keep pace with her colleagues in any of the physical exercises. She had been at RNRMC for sixteen weeks, and despite some improvement she remained unable to complete a 1.5 mile run in less than 30 minutes, due to fatigue and shortness of breath. There were no other symptoms, no significant past medical history and examination was unremarkable. However on close questioning, she did admit that during her school years she had not been able to correct to the same extent as her peers group. In addition her mother was requiring treatment for left ventricular failure and used Digoxin.

Investigations including haemoglobin were normal, serum electrolytes, urea & creatinine, thyroid function tests and chest X-ray were normal. Her ECG electrocardiogram showed marked repolarisation changes in the anterolateral leads (Figure 1). Further investigations included an echocardiogram and exercise tolerance test. Echocardiography including colour flow and Doppler revealed an enlarged left ventricle but otherwise demonstrated normal heart with a normal LVA size.

The patient completed 11 episodes of the Bruce protocol stopping due to shortness of breath. Although a maximum heart rate of 175 bpm was achieved there was no significant blood pressure response to this exercise. The ECG at peak exercise showed no modification of the repolarisation changes (Figure 2).

Cardiac catheterisation revealed normal coronary arteries. However left ventricular end diastolic pressure (LVEDP) was raised with the post A wave values ranging between 34 and 37 mmHg (normal 10–20 mmHg). Left ventriculography was normal and there was no gradient as it dilated through the LV cavity or

across the aortic valve. Right heart catheterisation demonstrated raised pulmonary pressure secondary to an elevated pulmonary capillary wedge pressure of 37 mmHg with a large A wave of 33 mmHg. However there was no features of pulmonary stenosis.

This clinical case subsequently referred to a specialist centre where a review of the case confirmed the belief that she was suffering from a variant of Hypertrophic Cardiomyopathy (HCM) in view of the diagnosis she has been medically discharged from the Service.

Discussion

The differential diagnosis of the repolarisation changes seen on the above ECG is:

- Ischaemic processes
- Hypertrophic heart disease
- Antidromic right ventricular dysrhythmia
- Hypertrophic cardiomyopathy
- Electrolyte imbalance (potassium release)
- Subarachnoid haemorrhage
- Normal racial variant

Myocardial ischaemia is the recognised cause of these changes but in the younger population the prevalence of the other conditions is far greater. Raised pulmonary capillary wedge pressure may be caused by mitral regurgitation or dilated ventricular chamber failure and diastolic dysfunction. There are various echocardiographic parameters used to measure LV diastolic dysfunction namely E/A ratio E deceleration time and pulmonary flow velocity. The elevated LVEDP indicates it is a case where there is a problem with LV compliance. Together with the raised pulmonary pressure, the raised LVEDP is indicative of left ventricular diastolic dysfunction or a restrictive pattern. This is further supported by the fact of blood pressure response to exercise in a young person presenting with dyspnoea these findings suggest a diagnosis of Hypertrophic Cardiomyopathy (HCM).¹

¹Imperial Londonian, Crossroads 80 Fisher and Gilbert
Correspondence: T J Gilbert an serving as Military of Exeter
Hospital/Army Generalist, Plymouth

Taking its name, Hypertrichus Caudemephorus does not always produce myocardial hypertrophy and the most frequent pathophysiological feature is often diastolic dysfunction manifested by raised end diastolic pressure in the left ventricle. Causing tachycardia in the pulmonary system. The pulmonary congestion and the inability of the left ventricle to respond to pressure explain the dyspnoea on exertion. In addition, at the rate, the hourly history of small fibrillations and heart failure may be crystallized in this condition.

is obtained in an interview by a non-ill patient in 50% of cases.¹

Although the natural mortality of HCM is 1% per year there is an increased risk of sudden death particularly in those who are less than thirty years old at the time of diagnosis. HCM accounts for 7% of cases of sudden cardiac death and this risk is exacerbated by numerous factors so that the advice given to patients with the condition is treatment of such matters as cigarette smoking.¹

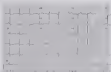


Figure 1. 12 lead ECG tracing showing no significant changes in the untrained leads

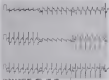


Figure 2. 12 lead ECG showing no significant changes in the untrained leads

Conclusions

The vast demographic, the prevalence, manifestation and distribution of an important cause of sudden death in young people. This risk is exacerbated by physical exertion and consequently it is of vital importance to the Armed Services that potential risks are identified early. There is no influence for its adequate history. In this case the family history and further questioning could have identified the problem before the event was put at risk. However, family history is only present in 50% of cases with HCM.

Two of the most frequent causes of sudden death in young people are Hypertrophic Cardiomyopathy and Arrhythmogenic Right Ventricular Dysplasia (ARVD). These conditions should not be considered as rare conditions in the Armed Forces, possibly being affected by HCM, ARVD and HCM frequently present with abnormal ECG's. In the present study the Armed Forces, only one manual screening electrocardiogram is performed. Screening ECG's are also used prior to high risk activities, such as diving, and on a regular basis in some trade grouping activities.

Many cardiac organisations, including the American Heart Association, currently push against the principle of cardiovascular screening for young competitive athletes, on both medical and ethical grounds.¹ The logical pre-screening of young athletes seems to defy where ECG's have been routinely used since 1982.^{1,2} Automatic reporting ECG machines are now widely used in medical practice, including the military, although they can have a tendency to "over-report". Valid reported reports are not.

Physical fitness is of paramount importance in all three Services. Consequently the inclusion of a routine ECG as part of a thorough fitness medical may now be appropriate and should in our opinion be recommended.

References

1. Kannel WB, Abbot RD, Castelli WP, et al. Prevalence, incidence and mortality of sudden death in young people. *Circulation* 1978; 58: 844-52.
2. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
3. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
4. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
5. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
6. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
7. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
8. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
9. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
10. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
11. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
12. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
13. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
14. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
15. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
16. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
17. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
18. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
19. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.
20. Kannel WB, Abbot RD, Castelli WP, et al. Sudden death in young people. *Circulation* 1978; 58: 844-52.

We would like to acknowledge the help of Surgeon Commander Paul Jones in the management of this patient.

Adventure and Travel

Snow Grey – a loan draft and new sea legs

SRS Stapleton

RMS Asgard was a member of the Hydrographic Surveying Squadron. She is 64 metres long, weighs 1400 tonnes and as I was to find has the feeling characteristic of a corkboard with rubber corners and being without stabilisers is rather lively on a seaway. Anything more than a Force 4 or 5 sends her rearing for coast which at a maximum speed of 14 knots with all four engines racing and a following wind can take some time. The ship's company is about 50 of whom 25% are female.

When I read on RH Radar's captain orders that travel was being made for a loan draft for Naval Service to *RMS Asgard* I applied immediately

and had the names of ships I joined on 24 May at the Clyde Naval Base. Their evolution proved to be slow as I did as much as I thought the correct order. I was beginning to look for Jeremy Bristle to appear round a corner as every person I asked seemed to send me off on a different direction. My difficulty was compounded by my failure to appreciate that ships of the Survey Squadron were now painted grey rather than white. (Not Snow-Gray rather than Snow White.)

Sailing was delayed for a day to allow completion of arrangements in People's movement. They gave me some for the initial cost of the ship and a run ashore in Helensburgh with some of the ship's company.

Soon after sailing, while still in the calm water of the loch, there was an attempt of *Storm* drill – roughed practice where sailing to ship 4 that the ship was about up to a respectable time.

Next day the ship was no longer in the sheltered waters of the loch. I was told that since in the two hour also passing up I decided that was a good time to start sailing. Stagnant and weak. I find hooded people's advice to take it to five among the ship. I spent much of the day in my bunk – the only place I did not find the need to vomit every fifteen minutes. Luckily I did not have to stomach myself when I bumped over the Commanding Officer, Commander R G Stewart. He was sympathetic because he along with 60% of the ship's company, suffered from some degree of seasickness. Luckily towards the end of the crossing I managed to feel more human.

Next morning I visited *Storm* and was round with my sea-legs which worked well enough for me to manage breakfast.

I had my first real taste of medical life at sea when one of the ship's company presented with chest pain. Having decided on a diagnosis, and that it was not *Myocardial*, I told him to get down on the deck and play *Kodak* as while he had some muddled up in the previous two weeks, and made me 'apostrophise' him to not a medical officer at *RMS Asgard* on our return. With the



RMS Asgard

Looking North from Stapleton (SRS) looking out over the ship at the Naval Medical Training Centre in Royal Naval School of Medicine.

1. revenue. A Regulating Party Officer who is in charge of first aid parties and medical stores on board. I assumed the first aid posts on the Westwood and James Bates Gallies to ensure that there was one each to be used by the Chief Petty Officer MA, the Flag Officer, Surface Hostile HQ and then included the doctors on to first aid boxes around the ship. Once this was done I prepared one of the stores from the boxes for safe disposal when



Philip Macbeth, a Sea Study underwriter, with LHM Supatone on board

moving away from familiar medical territory I set off to discover what the ship had to offer. I went out to the Sea Study to collect the gages that had been lying on the seabed near the portside wreck collecting information on lost equipment and documents and other technical data. Being a bit rough, the boat spent more time above the water than on it – which made for a 'white knuckle ride'. One night I was given a course in vehicle recovery and vehicle first aid, plus training in vehicle fire. As it turned out I did not do a first impression of a wrangled cat. I also had to give the 'Clary' an update as slightly more complicated than the 'Bill' with only two members on pressure on the bridge before piping it over the main broadcast.

When the ship came alongside at Campbelltown I was part of the Rescue Party, which involved hanging rubber bucket ladders over the side to keep the ship communicating with the jets. Once ashore I managed to go for a run with the Executive Ops Officer and one of the WEMs. This was quite amusing to start with, because I had forgotten to get out of my sea legs and wobbled a bit!

With Captain's orders approaching I got to be a little hand with a paper board and using a

wheel as more effective steering and signals – and short points if one was not when I completed a COBR. Finally examination and helped with Boston Scumpling (of a non medical nature). I topped the first aid party as a WEMC member and celebrated the CU on their performance.



What are you waiting for the sharks are getting hungry!

A more successful rescue on involving the discovery of the Whisk

On the 24th Thursday of my two weeks the Chief Officer's Wife volunteered me to be Secretary of the Whisk because they had been and failed on more than one occasion to get out 'on a line'. I felt because I wanted to accept the challenge despite walking legions. After leaping off the side of the ship to retrieve a small boat. Nevertheless, I did just that despite the CU keeping the ship 20 metres away rather than the usual 50 with a great gain in time. After having taken good profit at sailing out of the sharks and gillyfish he had seen in that time.

The ship's company had found it difficult to keep up their first aid training away from home and without a Medical Assistant on board and I had hoped to do something about that. I soon appreciated the difficulty of getting all the people concerned in the main place at the conference due to their specialising and other duties. Nevertheless, I determined to cover by poster, handouts and book notes with the Boat crew, Commanders and First Aid Parties, adding real eggs concerning last 14 days for the first aiders. There would be advantages in having a Medical French rating onboard especially as the ship can be anything from 11 (8 hours) from South and means helicopter rescue or land

I was struck by how stranded you are as you wait to take in your book, too. The rest of the staff (there is the money man) can be a bit or more off-line. However, there is a definite communication available for emergencies. You can look opportunities via the LEXUS/24/7 system made on the web of the shop's website but there is a limitation on amount of information you can get officially on the distribution of books. Regarding a supplementary cell phone call to the Medical Center, send us info.

This really was a special opportunity for me to get my first real and one with the Royal Navy is really all about. I suggest that Q&A/24/7 always have the opportunity of a should within their way, especially to those who be better known. Winning my H&B Book & T-shirt in Wigan drew the attention of a car salesman, who turned out to have been the first man of one of the shop's clients - and just the first person of a special occasion when I was changed my car!



Every penny NaaFi makes is reinvested into its shops and clubs to improve the quality of facilities and services & returned in the form of a dividend.



Serving the Services and their families Worldwide

Operational Medicine

Great Britain's ratification of the 1977 Geneva Protocols: greater protection for medical personnel in conflict areas at sea and ashore.

M A Myer

The United Kingdom ratified the new 1977 Additional Protocols to the 1949 Geneva Conventions on 28 January 1998. According to the terms of these two Protocols, they entered into force at the constitutional level on 28 July 1998, six months after the deposit of Britain's instruments of ratification.

Like the Geneva Conventions before them, the 1977 Additional Protocols extend protection to medical services, namely medical personnel, medical units, and establishments, and medical means of transport. This article will summarize the background to the United Kingdom's ratification of the 1977 Geneva Protocols, and then consider the implications for medical personnel in conflict areas, at sea and ashore.

The Law of Armed Conflict

Armed conflict, whether international or non-international, is governed by certain rules, some of them of ancient origin. These rules can be written or unwritten, being based on custom or on the practice of States (called 'customary law'). They aim to promote the interests of armed conflict and to regulate the means and methods of warfare. The rules, vary widely in different nations. The Law of War or International Humanitarian Law, as in the British and other Allied Forces, the Law of Armed Conflict (LOAC).

Regulation of the laws, used to describe the law is extensive; it covers things extended to apply in the battlefield, or otherwise in the midst of operations. It takes into account both military and humanitarian requirements. However, personnel helped to make the law and their essential humanitarian concerns to ensure efforts to develop the rules.

As Michael A Myer in the World of International Law is the National Headquarters of the British Red Cross

1977 Geneva Protocols



LEFT: A team working on a computer program of war on a British ship at sea, the *South Atlantic* (captioned in 1992) (Source: ICRC)

The main instruments of contemporary LOAC are the four 1949 Geneva Conventions. They cover lost categories of war victims: the wounded and sick, the shipwrecked personnel of war and civilians (mainly those, at some point). These treaties, as an important means of ensuring that for each war victims, also protect the medical personnel of the armed forces. However, privileges are granted to harvest doctors and nurses and for their personal health, but rather because wounded sick and shipwrecked persons require their services. Nearly all countries are parties to the 1949 Geneva Conventions.

LOAC has often been developed in response to the experiences of the most recent armed conflict and in this way the 1949 Geneva Conventions reflect the experiences of the Second World War strengthening the then existing law and providing new rules to fill apparent gaps. The four Geneva Conventions are very comprehensive, and it took 48 years to come 50 years after their adoption.

The bulk of the provisions of the 1864 Geneva Convention apply during international armed conflicts that is, after their creation. Since 1864 an increasing number of conflicts have been internalized and international in nature occurring within a single country. Most battles are now civil wars, conflicts that may be paid for by soldiers engaging in guerrilla tactics and now weapons have been manufactured which may be delivered from a distance and whose impact may be catastrophic. A Diplomatic Conference was held from 1874-1877 to seek to address these changes in modern warfare by supplementing the existing law with provisions.

The First Additional Protocol of 1867-1868 Geneva Protocol II covers international armed conflicts. Under certain conditions wars of national liberation are included in this category. The Protocol's most notable achievement is the greater protection it gives to the civilian population against the effects of hostilities. Humanity is reflected in the civilian population and its civilian objects (that of which are defined as opposed to military forces and objects, it is held that) that only the military may be the target of attack. More humanitarian and humanitarian attacks are forbidden. Unnecessary human suffering is kept to the fullest extent possible within the laws of war. Protection is given to the natural environment, cultural objects and places of worship. In addition works and institutions containing dangerous forces, such as dams and nuclear generating stations are protected, as are objects indispensable to the survival of the civilian population such as crops and drinking water supplies.

The Protocol's other elements include the protection of prisoners of war, a provision for the commitment of neutral treaty provisions on relief supplies for the civilian population, the inclusion of the category of prisoners of war to non-armed guerrilla fighters provided they distinguish themselves from the civilian population, the prohibition of certain means of warfare, the establishment of an obligation to search for missing persons, and the collection of specific measures to be taken by States to facilitate the implementation of the Geneva Convention and the Protocol, such as legal reform in the armed forces and a strengthened system of appointing Protecting Powers. There are sanctions in the event of breaches, the third version of which are regarded as war crimes. An International Fact-Finding Commission is

established to investigate allegations of grave breaches or other serious violations of the Geneva Conventions and Protocol I with the agreement of the parties concerned.

The Second Additional Protocol (1877-Geneva Protocol III) applies in high intensity non-international armed conflicts (in those in which organized armed forces, under responsible command exercise control over part of the national territory). The Second Protocol supplements and develops Article I common to all of the four Geneva Conventions. Indeed

Convention Article 3 is a significant distinction Protocol I has still represents an advance in the development of the law and it applies will provide greater protection to civilians and to objects such as individuals in detention who are no longer taking part in hostilities. Compliance with Protocol II does not imply recognition of any state, for domestic armed forces, nor does it restrict the right of States to threaten or establish law and order.

The Protocol provides fundamental guarantees of human treatment and of fair trial and protection for the civilian population and for certain types of civilian objects, namely objects indispensable to the survival of the civilian population, works or installations containing dangerous forces, and cultural objects and places of worship. The forcible displacement of the civilian population is prohibited unless their safety or imperative military reasons so demand. Harassment of civilians is also forbidden.

Both 1921 Protocol, strengthen the position of Red Cross and Red Crescent organizations in particular that of the International Committee of the Red Cross (ICRC) in providing neutral humanitarian services for the benefit of victims of armed conflicts.

Implications of the Protocols for German medical and nursing personnel

Protocol II: Protection of medical staff

Over 30 articles of 1877 Geneva Protocol I address matters of direct relevance to medical and nursing personnel. One of the most important details of the Protocol is that civilian medical personnel and units subject to inspection and authorization by a Party to the conflict enjoy protection comparable to that previously given to military medical personnel and units and to State recognized civilian hospitals under the 1864 Geneva Convention. This protection was extended to such civilian medical personnel and units in order to help

cannot avoid and effective care to the wounded, sick and shipwrecked. To avoid abuse, as noted this protection will only be provided in those personnel and units recognized by the authorities of a Party to be suitable.



Personnel personnel

Persons at sea, i.e. crews of merchant vessels including stranded and shipwrecked merchant personnel, medical units and medical transports. Their safe passage to the land and under escorting is less likely to occur. From an operational view such cases are more clear than for example voluntary personnel officially recognized by the Government and entering the wounded alongside medical personnel and administrative staff of the medical service will be applied to provisions.

The physical and mental health and integrity of the persons whose liberty has been restricted owing to the conflict are protected, and physical mistreatment or means to experiments on such persons are specifically forbidden. It is prohibited to subject such persons to any medical procedure not indicated by their state of health and not compatible with generally accepted medical standards. The purpose is not only to prevent purely medical experiments but also the uncontrolled removal of organs for transplantation in the case any diseases of blood for transfusion and of skin for grafting are subject to specified conditions. People in the power of an enemy are not to be treated as experimental guinea pigs nor as sources of biological spare parts.

Medical and nursing personnel who render LHM are subject to guarantees and those seriously wounded or injured are also called in a certain case with very severely Protected I standards and such provisions relating to the preceding paragraphs such as

seriously endangering the physical or mental health or integrity of any person whose liberty has been restricted owing to the conflict, by a mistreatment or coercion. Detailed experimental papers and positive instructions for example must already exist in force under the 1949 Geneva Conventions.

The performance of medical duties is generally protected under circumstances that persons be provided for carrying out medical functions compatibly with medical ethics, regardless of the person handling them. In addition, no person engaged in medical services shall be compelled to give any information concerning the persons under their care, except as required by the law of the Party in which the person engaged in medical services belongs. This means that local doctors for example, do not need to report the presence of wounded members of the enemy in areas in the Disputed Zone, or a military doctor does not need to inform the enemy.

In the field or at sea it may also be useful to remember that the civilian population and its members have the right to go to the aid of the wounded sick and shipwrecked and to be treated as escaped ones, and for the Parties to the conflict may appeal to them to collect and care for such persons and to search for the dead, to protect their right of initiative may be limited and such measures permitted the civilian population would not enjoy more freedom of movement than military medical personnel whose access to places where their services are essential may be subject to supervisory and safety measures by the relevant Party to the conflict.

Authorized medical personnel and transports military or civilian are protected against reprisals. That is such medical personnel or, cannot be attacked, as an exceptional measure to limit the illegitimate to which they belong to support LHM.

Provisional Protection of medical transport

A number of provisions relating the scope of protection for medical transport, in particular medical aircraft. Hospital ships, balloons and other rescue craft referred to in the Second Geneva Convention of 1949 on the wounded, sick and shipwrecked of armed forces it may also carry civilians wounded sick and shipwrecked without infringing their right to protection. Medical ships military or, provided on which which are not, such as rivers and lakes, and protection of a navy hospital ship has been placed to ships and craft other than

the hospital stage referred to in the Second Geneva Convention which may be used and transported by an aircraft, to medical aircraft or medical craft.

The improvements introduced in Protocol I for medical transports are more significant with respect to medical aircraft. At the time of the negotiations of the 1949 Geneva Conventions it was accepted that, with the situation in long range warfare, protection for medical aircraft could not depend upon visual identification: the display of the red cross emblem on the fuselage was insufficient to indicate clearly the status of the aircraft. Protection was therefore based on formal agreements between the belligerents, as the High-plus sign (see Figure 1a) stated, with the result that, as previous medical aircraft was rarely used. The same problem of visibility also applied to some extent, to the display of the red cross emblem on the hull of a ship.

By the Diplomatic Conference on the 1976 medical developments, made it possible to show it effectively medical aircraft and other medical transports before they become visible through the use of electronic means such as secondary Surveillance Radar (SSR) and radio signals. Such high lights may also be used by all medical transports during armed conflicts. Protocol I contains a technical Annex providing the necessary technical details, and paragraph 2, reads in this Annex to be reviewed every four years to ensure that it reflects advances in protective identification after Annex has been amended once in 1984).

The Protocol also contains provisions which set forth the rules on the rights and duties of medical aircraft and their occupants depending on the areas over which they are flying. These in addition rules for carrying out medical missions include prior agreement with the various authorities concerned with respect of routes and flight plans, etc.

Since the adoption of Protocol I specific provisions have been included in the International Rules Regulations with regard to medical transports on land, at sea and in the air, strengthening their protection during armed conflicts.

Protocol II: Protection of the wounded, sick and shipwrecked in non-international armed conflicts

As already noted, Protocol II is less developed than Protocol I. However, it contains provisions related to the wounded, sick and shipwrecked

which are generally identical to the corresponding provisions in Protocol I, although less detailed. Thus they usually supplement the very basic provisions in Article 3 common to the 1949 Geneva Conventions that [are] wounded and sick shall be collected and cared for.

Protocol II stipulates that medical personnel, units and transports will be respected and protected also, medical activities as such. All wounded sick and shipwrecked whether or not they have taken part in the armed conflict, will be treated humanely: there shall be no distinction among them except on medical grounds. They and civil or not medical personnel may be used under the direction of the competent authority for medical personnel, units and transports, the emblem shall be respected in all circumstances and it shall not be used improperly.

Protocol II introduces a ban to which a limitation for the wounded, the dead and the law of non-international armed conflicts. The relevant provisions in the First and Second Geneva Conventions, pertaining to international armed conflicts, relate thus, any provision in Protocol I.

Implementation

The new provisions of the 1977 Geneva Protocols will come into effect only if they are properly applied. As indicated, Protocol I itself specifies a number of measures to promote respect for its provisions. These include the enactment of laws to punish the most serious violations, and proper identification of persons, objects and places entitled to protection. The United Kingdom has also accepted the competence of the International Law Finding Commission, which may investigate serious violations of the Geneva Conventions and Protocol I.

In addition, the United Kingdom has enacted the legislation necessary to give effect to the two 1977 Protocols in United Kingdom law, namely the Geneva Conventions (Amendment) Act 1980 (see Act House of Commons Session 1979-80) and the Administrative Arrangements, necessary to implement the Act. General responsibility for the implementation of the Act 1980, with the Secretary of State for the Home Department. However, questions on specific aspects should be addressed to others. For example, the Defence Council remains responsible for enforcing use of the red cross emblem, and questions concerning the use of high-ups in medical aircraft identification on medical transports should be

attached to the Civil Aircrew Service, Department of the Environment, Transport and the Regions (for medical records) or to the Chief Surgeon (Medicine and Casual Agency) for records provided by the Geneva Conventions and Protocol I.

However, the United Kingdom has recently established an inter-departmental Committee for International Humanitarian Law (in effect, ILOAC) one of whose tasks may be to help secure comprehensive domestic implementation of the country's ILOAC obligations. The Committee is a mechanism to promote implementation, encouraged by the International Committee of the Red Cross and Red Crescent, and not found in any treaty text.

Efforts are also being made to update Britain's Service manuals to include current developments in ILOAC.

Possible areas for development

Quite naturally the Geneva Protocols, although still current, do not govern every development in warfare or relevant technology which has emerged during the past 50 years. Some new measures could be implemented without requiring amendments to a treaty. An example is the Red Cross fleet, used to protect hospital ships during the South Atlantic Conflict in 1982. This innovation came in line agreed by both Parties was in the spirit of the 1949 Geneva Conventions and Protocol I. Other developments may require a revision to the international law. For example under the Second Geneva Convention of 1949 hospital ships may not use secret codes for communications (Article 34). However this provision may need to be re-examined in the light of modern communications.

Moreover whether the Second Convention (or Protocol I) addresses the question of possible means of defence of the hospital ship itself. Again, given modern means of warfare it could be acceptable for hospital ships to be equipped with purely defensive means of weaponry, such as staff and flare pistols, such equipment is wanted in the other Parties to the conflict. This is demonstrated in a statement of the law of naval warfare, the *San Remo Manual*, prepared by naval experts and international lawyers and published in 1994. Few States can afford to have dedicated hospital ships, the United Kingdom used a Primary Casualty Reception Ship (HMS Argyle) during the Gulf War 1991 which could also be used for non-medical purposes, and will therefore a legitimate military target. It may be

that the problem of limited resources will also need to be taken into account in any revision of the law.

Developments in warfare may also lead to greater use of existing measures of implementation. An illustration: when people do their fighting without seeing each other, how can those entitled to protection already distinguish? Radio signals may be introduced for carrying out medical evacuations, and, although there are radio transponders, helicopters may be unable to see them. I have would then be agreement on greater use of distinctive signals. Or more use could be made of protected zones such as neutralised zones, and non-defended localities, already provided for in the 1949 Geneva Conventions, and 1977 Protocol I. Such special zones protect special categories of war victims, such as the wounded and sick, and/or all those not participating in hostilities. Their rather than ask to derive new measures of protection, it might be useful first to consider whether the existing rules provide a satisfactory solution or at least give an indication of a practical way forward.

The need for training and education

The 1977 Protocols require that there must be dissemination as much as possible, and Protocol I provides further in some detail, including with respect to the armed forces.

The broad principles governing the delivery of medical and nursing personnel during armed conflict are reasonably simple. The majority of those protection and assistance to the wounded and sick, non-discrimination in the care of patients, prohibition of inhumane treatment to patients are valid in all cases. More medical and nursing personnel will find that they apply these measures easily without having learned them as part of their professional training or natural inclination.

However it is important that the rules of ILOAC are contained in the training for Service medical and nursing personnel. The medical services in the field is part of the military mission and necessarily requires of any rule to be codified. This means that medical and nursing personnel share the same pressures as their comrades who are fighting, and they must take care not to let their personal loyalty to their own rule put them into conflict with their humanitarian obligations. The medical services of the armed forces, who's have many responsibilities under ILOAC, can serve as an

example to combat drugs and others who also have a responsibility to uphold that law through the rights and duties of criminal and nursing personnel helps to develop L.D.A.C. It is essential to know them so to be able to perform one's criminal research under the most difficult and

troubling circumstances, grasp concepts and the best possible treatment to all.

The views expressed in this article are personal and do not reflect those of our Red Cross or Red Crescent organizations.

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Clinical Medicine

GP 2000: What's happening in general practice?

NS Bewar, CJC McArthur and JB McKeating

The new NHS poses new challenges. Primary Care Groups and Trusts are now responsible for contracting services. GPs will increasingly be expected to put clinical performance into practice by following evidence based clinical guidelines produced by the National Institute for Clinical Excellence and monitored by the Commission for Health Improvement. Patients are being targeted by NHS Direct and seen in drop in centres. The new *NHS strategy*, for the NHS trusts and multi patients. An obligation is on the business and to ensure success a GP will need to work with a variety to demonstrate a commitment to delivery following by introducing a personal agency plan linked to a personal performance objectives plan.

All well and good but what does it all mean, how will Royal Society general practice respond to these innovations and how equipped are you to meet the challenges of the millennium?

Primary Care Groups

At 1 April 1999 your local health and the internal market has been delivered and GPs have joined Primary Care Groups (PCGs) consisting of around 10 GPs and community nurses/health care workers serving a patient population of about 100 000.

A third of the majority of whom are elected GPs may the PCG with a chairman (not necessarily a GP) accountable to the Health Authority (HA) for the financial position of the PCG. It has the choice of developing on one of four models in which it possibly target from

taking on an advisory contracting role to being completely responsible for all healthcare purchasing. The majority of English PCGs are primarily in level 2 levels 1 and 3 PCGs operate as HA subcontractors which gives them responsibility for managing the health care budget in their area.

Clinical Governance (new) will be introduced by a nominated doctor/consultant, responsible for producing an action plan. Individual practices will be expected to nominate one person to carry the plan forward.

Level 1 or 4 PCGs will eventually become Primary Care Trusts (PCTs) with their own boards and executives. The board consists of 11 members including a chairman first by members a chief executive, finance director and three professional members who are also members of the trust members. One of the three professional members will be the director of clinical governance. The executive will have a professional majority including GPs and community nurses, and managers in addition to a chief executive, financial director and social services officer. The executive will be responsible for day to day decisions including clinical governance and primary care development. It will be held accountable to the board who will have a final say in any disagreements.

Education and training for all practice staff will be the responsibility of the trust. It is expected that the trust will have the power to offer many flexible working arrangements such as the reduced option to GPs and may also be able to offer financial incentives schemes.

All UK, various practices are represented on PCGs with a varying degree of confidence being demonstrated by Medical Directors and PCTs in so many cases a primary practice represents only a tiny proportion of the PCG's patient population. PCGs are still in their infancy and it is not yet clear what influence they will exert on service provision.

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Chloral Guidelines

The NHS White Paper and a further document³ on quality introduced the term, *chloral* (pronounced to look 1990). Essentially, chloral programmes aim to raise chloral standards by:

- developing and national (national) based chloral guidelines
- encouraging efficiency and
- promoting *cost saving* professional development (LFD)
- improving risk management by developing guidelines for reducing and deriving lessons from unwanted accidents, complaints, and claims.

Chloral guidelines will be based on *and* effectiveness as well as *best practice* and their development will be monitored by the National Institute for Clinical Effectiveness (NICE) which has a governing board made up of clinicians (jointly) from NHS managers and research organisations. Appointed clinicians will be responsible for ensuring the local application of the guidelines. NICE will also develop methods of clinical audit with a view to reviewing new drug developments before they come on to the market.

GPs have concerns. Raising the quality of health care requires investment and the increasing role of general practice is likely to increase. GPs will be increasingly accountable through professional control of prescribing, diagnosis, and referrals. The independent status of the NHS GP is likely to be increasingly eroded.

Performance indicators called National Service Frameworks (NSFs) covering six broad areas of NHS performance are being introduced. Each area contains a list of individual indicators. GPs in different parts will have a direct impact on patient practice. Examples are the number of consultations under the age of 16 for doctor, nurse and quality of family planning services and the percentage of patients treated for heart and coronary diseases. To measure the success of health promotion programmes, and access to services.⁴

NSFs will put forward minimum standards of care and prompt us to strategies that patients can expect, and will identify whether this is best provided in primary or secondary care level.

A new Commission for Health Improvement (CHI) will probably have the biggest impact on GPs and PCGs/GPs. Its main role will be a *primary care* PCGs will be expected every three or four years when inspectors will check that the

NSFs guidelines are being achieved and that the NSFs are in place. PCGs in turn will be able to call on CHI to review individual GPs if they are concerned about their performance.

An annual Personal Service of Health and User Experience will be carried out and will include questions on standards of clinical care, staff attitudes, waiting times, and the quality of clinical records. Results from individual HA districts will also CHI of particular problems.

It is not yet clear whether CHI will visit General practices (as part of some PCGs) or whether our performance will be assessed in the annual National Survey. However, most Royal Navy practices are well placed to meet the various challenges. Emphasis on clinical governance, all are regularly audited by the primary care local or the First Medical Director. A multidisciplinary governance and audit approach is employed as part of the procedure. This is frequently reviewed.

In addition to the regular meeting of RM practices, the RM Clinical Effectiveness Group (as offshoot of the RM Clinical Users group) has produced some 10 evidence based clinical guidelines and associated computer templates for use throughout RM primary care. The collection of the articles are currently performing in most of the effectiveness of these systems.

However, we must not be too complacent. CPD and the concept of life long learning are part and parcel of clinical governance. GPs within PCGs are expected to develop personal learning portfolios (below) which incorporate individual needs and local NHS developments. At present, there is no requirement in financial support for RM GPs to undertake CPD (NSFs). GPs are required to maintain 90 hours of CPD per annum by which they are paid £2,000 and an amount of such activity are maintained. A more forward system is required. To assist the improvement of clinical governance and clinical effectiveness (below), a portfolio to record educational activities and help formulate a personal learning plan (PLP) will need to be maintained along with a personal professional development plan (PPDP). The Defined Model of Service, Appropriately Based in General Practice (DMSBGP) is currently considering a to review approach to these issues.

Evidence Based Medicine

Evidence Based Medicine (EBM) involves drawing evidence (evidence based) on scientific evidence rather than following the opinions of

individuals, whether or not they are regarded as experts. In general practice, EMH can be used to derive standardised treatment plans for common conditions.

Single clinical trials often fail to give practicable results because of insufficient numbers. Meta-analysis seeks to put round the problem by providing summaries that are based on statistical techniques to combine results from similar trials and attempts to provide clear guidance, in a more varied range of patients, and treatment protocols.

Lipman¹ describes the process of evidence based practice as consisting of five steps:

- define a clinical question from a problem presented by a patient about which you need further information
- ask the question to guide a search for information (usually in a database)
- critically appraise the evidence
- use the conclusions from the critical appraisal in managing the patient's problem
- evaluate your performance

Clearly a search and critical appraisal of the results of every consultation is impractical but to some extent there is nothing new here, and the type of structured approach to clinical problem solving can help elucidate the nature of the problem and assist the GP in asking the most pertinent questions, performing the most appropriate examinations, and arriving at the correct diagnosis, thus liberating the patient on evidence based decision making may help clarify the problem and identify the best means of managing it.

EBM is a useful educational tool for the trainee GP. Cells of study skills are essential in research papers may be flawed and care must be taken when extrapolating from hospital based research into general practice. There are several sources of information: databases such as the Cochrane Library and Best Evidence provide rapid access to critically appraised material; can overcome the need to carry out full Medline searches and manual appraisal.

EBM cannot replace the established skills GPs use in the consultation: a purely scientific approach will miss the psychological, social and cultural factors that are difficult to measure but so important in facilitating decision-making in general practice.

The clinical problems and associated symptoms that have been produced by the RN Clinical Effectiveness Group are evidence based

and peer reviewed. There are not one-off publications but will be regularly reviewed and updated. Medical Officers who have access to further symptoms and guidelines that could possibly be included are invited to contact the chairman of the Clinical Effectiveness Group (Deputy Commander Mr Kensing).

NHS Direct

NHS Direct aims to 'speed up patients' access to health advice and cut GP workload by providing telephone helpdesk run by trained triage nurses and developing high-direct telephone health centres (which may be based in branches of national pharmacy chains). Triage nurses are supported by a computerised decision system containing protocols for managing thousands of conditions as well as information on local resources. Patients are given advice on self-management (which may be to purchase an over the counter medication) or are referred to A&E, their GP or district nurse. 40% of the country is already being offered this service and the aim is to extend this to the whole country by the end of 2000.

There is a concern that money may be squandered from POCs to fund the service and would result show that POCs there is under performing and actually increases GP workload with the service encouraging patients to book appointments with their GPs. Another worry is that NHS Direct could involve into the sale gateway to all NHS services with a threat to the GP's traditional and effective 'gatekeeper' role.

Nurses working in triage stages receive local area guidelines and this is an area where we are ahead of the game. RN medical staff are trained in triage and can refer to numerous local protocols and standard codes (including others in practice when working on their own) incorporating use of standardised symptoms and protocols whilst EMH will also be of use.

A new IT strategy for the NHS

The new IT strategy for the NHS will also impact upon working practice. The electronic health record (EHR) for primary care and the electronic patient record (EPR) for hospitals will be accessible by voice only. This takes off the Linked Groups approach and dedicated hospital ward and community Mary the message between GP and hospital.

Sound access to the EHR wherever a health care worker is the aim but this does almost nothing regarding data security. GPs are

regarding the confidentiality of patient information (paper and electronic) and will need to work without patient failure concerning patient records in electronic records.

Also have been given £10 million for GPs for GP practice) to give all computerised practices access to mail via the Internet and the NHS net. It must make it easier and faster to connect people, local messages and questions and answers to make. Access to the Internet offers a huge educational resource and once connected to the NHS net target was originally for all NHS practice to be connected by Dec 95; practice Internet will be increasingly restricted electronically.

The new technology is exciting but it is not everything. The NHS nation will only find satisfaction in the NHS of a single computer per primary and additional funding will be required to provide the necessary GP's desktop. There are numerous issues to resolve including staff training and equipment on the most appropriate way of managing training and initial learning of experience, without adequate practitioners in a field of electronic based medical records in the NHS cannot proceed but even if it will be linked with the electronic patient who appears at the surgery checking a list of information downloaded from the Internet. It is mainly possible the technology will be able to create a patient's clinical history in a similar format and the GP role will become harder to define.

Almost all have based NHS primary care information based with the NHS system. The electronic transfer of data for happy doctors between sites is currently undergoing trial and will also be a reality. The training programme has access to the Internet from most home computers. The NHS NHS Users Group (now chaired by the Advisor in General Practice (AGP)) is responsible for further development of the system within the Primary Care. Utilization of such services as 'Lynx' to download laboratory results into patients' electronic records has been repeatedly reported but has been refused on security grounds. Clearly that and other enhancements in the system will be access to the NHS net need passing in order for the NHS to create a new era of working NHS technology.

Regulation

Recent high profile cases of misadventure by doctors – including GPs – have created public confidence in the medical profession and have prompted a requirement for self regulation

before some means of regulation is imposed upon us. On 16 February 1999 the GMC decided overwhelmingly that to ensure their registration all doctors must be able to demonstrate regularly that they continue to be fit to practice in their chosen field. This is a revolution. It is likely that arrangements will begin in 2001 with the first survey 5 years later on final four paragraphs of the contract and that the process will be linked to continuing education.

Performance will be profiled locally and linked up with periodic external peer review of the practice process together with periodic submission of evidence to the GMC that will continue the doctor's registration.

The profile will present a continuing and objective record of the quality of care that a doctor provides. It will be presented locally in the surgery, include the views of patients, colleagues and HAs and include:

- a record of continuing educational activity
- a portfolio of self assessment of the physician's skills for the individual and for the practice as a whole
- a record of participation in and the results of clinical and organizational audit
- the results of regular appraisals showing any changes in performance as to the extent of personal professional standards.

The external peer review could adopt some of the criteria used during the assessment of a training practice and include an element of the Royal College of General Practitioners or Joint Committee on Postgraduate Training for General Practitioners (JCPTGP).

It is a small minority of cases where a doctor's performance that would be local efforts to remedy the problem and if there are successful or struggle with the doctor will be referred to the GMC's existing fitness to practice procedures. If a thorough assessment of the doctor's practice reveals evidence of serious dysfunction the GMC would take action on the doctor's registration.

The proposed GP education curriculum for the Defining Medical Services (DMS) in the Armed Services General Practice Approval Board (ASGPAB) which measures standards in GP training within the DMS, and which is presently under review by the JCPTGP. It is likely that ASGPAB will work closely with the individual single service Advisors to General

Programme (1997) forming the core of assessment and evaluation procedures for RNLMD GPs.

The focus for evaluation is on individual doctors but there is a shift towards looking at what the practice as a whole can deliver. Perhaps it is time to stand back, and look ahead at the service we offer. SWOH medicine is a world moving point and could provide motivation at a PPD.

- Examples: what is the practice doing well and what are its strengths?
- Weaknesses: what is letting the practice down and could be improved?
- Opportunities: are there areas that could readily be developed?
- Threats: these include the competition and obstacles that the practice faces as well as changes arising out of the changes occurring within primary care.

Practice development aimed for a whole team service and requires personnel time to achieve. Some RNLMD practices have achieved an 'every day with good effect. Having a locumist may pay dividends and there is an area where the RNLMDs or the GP lead in the First Medical Division may have useful input.

Implementation of a PPD helps build the confidence of MDCs, patients, and the Community in the care being provided and identifies practice problems. It also identifies the educational needs of the practice as a whole as well as individual team members. Individual practices should identify their clinical processes and practice development co-ordinators. PPD teams may wish to consider the following template for some specific areas of practice activity when considering practice development.

- Access and availability
 - How are urgent problems dealt with?
 - How long must patients wait for a routine appointment?
 - How is telephone access arranged?
 - Are consultation hours adequate?
- Management of acute illness
 - How do you deal with emergencies out of hours?
 - Are appropriate emergency drugs available - are they kept up to date?
 - Are staff trained in the management of common emergencies? Are protocols used?
 - Do you have a so called 'crisis team' which critical events and learn from them?

- Management of chronic conditions
 - Do you follow clinical guidelines?
 - Do you have adequate disease registers that allow you to undertake quality audits?
 - How good are your recall systems for identifying defaults in chronic disease clinics?
- Preventive care
 - Percentage of the practice population up to date for PULVACCINATIONS, immunisations, cervical screening
 - Is screening for any other conditions undertaken eg hypertension, serum cholesterol?
 - Is health education information available?
- Patient records
 - How good are your clinical records - are you clear what is on the computer and what is recorded in manual notes?
 - Are notes completed for new patients?
 - Are notes written and better in date order?
 - Is there a record of current and repeat medications?
- Prescribing
 - Have you a robust prescribing system and do you review repeat prescriptions regularly?
 - Do you maintain a practice formulary?
 - Is there a robust prescribing list for medical branch ratings?
- Practice organisation
 - How effective is communication within the practice?
 - Can patients see the same doctor or nurse during the same episode of illness to ensure continuity of care?
 - How efficient is staff working?
 - Do you maintain a satisfactory complaints procedure?
 - Is health and safety followed?
 - Do you have a computer system and up to date protocol information booklet?
 - Have you entered a patient system survey to assess the care that patients have had from the practice?

How prepared is the RNLMD Service for this type of practice development? Should MDCs consider personal involvement as a threat or challenge? As described above regular audit by First Medical Division MDCs reveals that the

majority of our medical facilities meet these standards. The main concern that is currently employed could be adapted to encompass a more detailed analysis of both practice and personal development as well as meet the emerging requirements of accreditation.

Our other strengths are that all major societies have EMIS (EMIS is not used in the field as gradually becoming available) and that has facilitated creating, producing, audit and protect information EMIS patients have been demonstrated. Realistic based clinical guidelines and associated templates have also been produced. Steps, requests are a valid clinical system and future focus risk. Our staff are well trained and attend periodic professional development courses. The RCG has reinforced the principle of learning as People and that has reinforced our commitment to training. The development system contains regular appraisal. Personal portfolios (for medical branch ratings) and the GP's are being developed.

Reviewers of the popular medical press will have read that despite the GMC's commitment to voluntary self-regulation - the Health Secretary has announced (November 1999) proposals to introduce statutory approval for GPs coupled with a requirement to carry out clinical audit. The plan, we contend in the Chief Medical Officer's consultation paper on dealing with poor clinical performance.

Apparatus will be carried out through the PCG with additional external peer review. We would be given appropriate powers to immediately suspend doctors whom they suspect of posing a risk to patients. They would also be able to refer doctors to new assessments and support centers. The system would be run by the clinicians and would play an intermediary role between doctors and the GMC by recommending who their under-performing clinicians should be referred to referred to the GMC. They would also be able to recommend to MCA that GPs should be suspended.

In addition to a requirement to submit evidence of clinical competence GPs will also have to prove:

- Participation in local clinical governance
- Ethics or teamwork
- Adherence to the GMC's Good Medical Practice
- Evidence of a personal learning portfolio
- Involvement in research, training, service development and innovation

There is also a proposal that doctors should carry out audits concerning their employment history and details of any serious complaints and litigation cases.

These proposals are separate from, but inspired in part, with the GMC's own plans to introduce first party checks under new Statutory Regulations with us - the latter that is still under way.

Life Long Learning

The focus of professional education is undergoing major review. The current PCMA system is often based on inappropriate learning methods with little theory, learning objectives, educational outcomes, outcome clear personal clinical focus and the educational elements of pharmaceutical companies may influence content or substance but it will probably not last beyond April 2004 and although a replacement blueprint has not yet been finalized, it is likely to be based on an overall PLP-based or a PDP.

Education is becoming moved to life long learning and increasingly will be tailored to reflect the health needs of the population and in which the GP is working with a greater emphasis on multidisciplinary practice, based education where this is appropriate. PDPs have been discussed above. PLPs (portfolios) are a part of this process and in addition to providing educational outcomes, standards and reflecting on to keep a reflective practice diary in which one may record interesting case studies. They can help to identify future learning needs. PLPs will form part of the portfolio that is used for evaluation. They should record explicit learning objectives and not just generalized aims and should be developed in conjunction with an educational supervisor/mentor (GP (EM) and the Associate Director in General Practice will need to create a structure to support such activity which may include a central data base of learning objectives undertaken by each individual.

Service MCs have many options for life long learning:

- Reflective learning - learning from past case experience of an unusual or demanding case
- Audit including critical event analysis
- Journal Clubs
- Reading (the Oxford Medical Library Service supplies all doctors with an approved stock of books)
- Case led discussions with other health professionals

- Co-ordinating training groups
- Traditional Postgraduate Course sessions
- The Royal Naval Medical College (RDMC) offers an excellent variety of on board courses
- The British Medical Training Organisation (BMTO) will pay the external costs of study days and distance learning courses subject to approval by AGP (RNI)
- Military external involvement such as Membership by Arrangement and Fellowship by Association of the RSCGP. The Practice Quality award (abstract) is also open to RNS GPs.

The training providers (and an increasing number of non-training providers) have access to the Internet with all the advantages that this offers for self-directed learning. There is also likely to be an increasing reliance of more formal structured learning within the developing RNS NCI and service providers will wish to take advantage of this in addition to using the RSCGP practice administration, continuing laboratory collaboration etc. The Royal Naval Medical Service now has its own website in which AGP (RNI) has a page. This is still embryonic, but will be developed to provide a comprehensive source of information.

Preparing for accreditation and clinical governance will be extremely challenging and

potentially time-consuming. RNS GPs should have no difficulty in meeting the required standards, as we are accustomed to regular assessment, and already work within a well defined structure. There will always be areas in any process that need improving, and it is certain that all of us will want to consider the need for MDD. We hope this discussion will focus MDD needs accordingly and act as a catalyst to practice and personal development.

References

1. Reports on it (Health: The new NHS: modern and dependable) London: The Secretary of State (1997) (Cm 3893)
2. Department of Health: Achieving Better Service Quality in the new NHS: Letter to Department of Health: NHS Clinical Service Circular HSC2001/003
3. Department of Health: Clinical governance: Quality in the new NHS: Letter to Department of Health Circular HSC2001/003
4. Lippman T. Applying customer focus: achieving top performance. June 20 June 1994
5. Information for Health: Implementation strategy for the NHS 1999
6. Department of Health: Improving patient protection: patient A: possibilities exist in governing, encouraging and making voluntary clinical performance of doctors in England. London: Department of Health, 1999



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Research

Primary Blast Injury: Pathophysiology and implications for treatment Part III: Injury to the central nervous system and the limbs.

R J Guy, MA Glover and NPJ Cripps

Abstract

There are some situations in which changes consistent with primary blast may be found despite secondary and tertiary blast being the most frequent causes of injury. The Central Nervous System for example especially the brain is well protected yet there are historical and experimental accounts of damage which cannot be attributed to secondary or tertiary blast or even an embolic mechanism from pulmonary damage. In early analysis and experimental workloads of specific physical agents low doses of primary blast alone can fracture bones and this is likely to be responsible for limb weakness or paralysis, reported in some cases of soldiers by high density.

Introduction

In the first two parts of this series we described injuries to those structures in greatest risk from primary blast: from the lungs, auditory system and abdomen. In this final part we deal with those systems that are far more likely to be injured by secondary and tertiary blast but in which important primary blast effects are recognizable.

Injury to the Central Nervous System (CNS)

Major head injury is the most common cause of death in modern warfare.¹ An exposed soldier of the front within the shell makes

primary blast injury of the CNS unusual and brain and spinal cord injuries are usually caused by secondary medium size blast. Nevertheless, the blast wave does appear in many cases effects.

In the first literature account in the effects of high explosives on the CNS, Mass referred to the concussion or compression injuries produced by direct "blast compression".² He cited various examples of non-infectious meningitis at different following blast exposure such as the following:

An Staff officer in the front of Egypt had a shell explode near him. He was not hit, but his consciousness for an hour. He recalled the shock of the shell as he went out of the dug out room. For some days he suffered such severe headache and nervous of the back of the head and down the spine, the lower extremities felt heavy and there was no loss of feeling. The last extension of arms for a day only and around the back there was a pain like an appendix pain. He rapidly recovered.

Such examples generated the vague concept of "shell shock". Problems on the extent of indirect trauma were largely confined to CNS injury and in particular the effects of carbon monoxide (CO). Mass gave little credence to pulmonary blast injury mentioning: "I do not see how a sudden exposure of the thorax is going to do any harm as the pressure will be equally distributed through the fluids of the body in all directions". Histological examination of the brain of a soldier who died 48 hours after blast exposure revealed multiple perivascular haemorrhages throughout the brain substance with a marked degeneration of basal ganglia termed stress atrophy. The spinal cord from a soldier

Cervical Injuries Commander Guy is serving with Med's Hospital, Northcott. Injuries Lieutenant Commander Cripps is working in the theatre of West Bank and Injuries Commander Glover is a consultant in Royal Naval Medical Centre and Injuries Lieutenant Commander Cripps is a consultant in Royal Naval Medical Centre and Injuries Lieutenant Commander Cripps is a consultant in Royal Naval Medical Centre.

blow-pipe when it was heated above and then died 24 hours after excitation. We also examined histologically. Necrotic haemorrhages were apparent particularly in the cervical region. In well-examined areas, necrosis of myelin and axonal swelling were obvious. In findings in particular the perical haemorrhages as there were no post-mortem examinations of cases of post-CO poisoning, although he did suggest the possibility of the unusual case that a pressure wave of the undersea explosion had set up by the concussion.

Following experimental primary blast injury, Zacharys especially found that blast pressure sufficient to cause death with extensive pulmonary haemorrhage in rabbits failed to produce any lesions in the brain. At much higher pressures (many times the lethal limit) some rabbits sustained haemorrhages into the ventricles from the choroid plexuses and haemorrhage into the spinal cord at the brain caudate root. Extensive spinal cord haemorrhages were also observed in these animals and in monkeys.

An examination of the brains of nine children killed by air blast occurred showed none and nine cerebral haemorrhages. There was no consistent correlation between pathological findings and symptoms, which as has been had indicated showed sometimes secondary and occasionally.

An investigation into the causes of post-concussion syndrome explored the possibility that exposure to a blast wave could affect the structure and function integrity of the brain.¹² Twenty-two adult male volunteers were exposed to the detonation of a single TNT charge in an underground bunker. The 22 volunteers and an equal number of control subjects were randomised at various times between one and 28 days. Examination of the brains of the volunteers revealed subarachnoid and some cortical haemorrhages but no evidence of neuronal damage or death. The most striking morphological/functional observations in the brains of survivors was an increase in the number of hyperactive microglial cells, a characteristic feature of neural degeneration and suggestive of neuronal phagocytic activity. These changes were evident mainly in the superficial areas of cerebral and cerebellar cortex between one and 14 days, but reduced by 21 days and were comparable to controls at 28 days. Ultrastructural examination revealed that activated microglia to be closely associated with

damaged dendrites and axonal terminals subjected to neuronal atrophy. This was particularly in one killed at day 14.

Increases in levels of lipid peroxidation products and water content have been demonstrated in the cerebral oligodendrocytes of rabbits sustaining pulmonary blast injury as a shock tube.¹³ Glucose and lactate concentrations were also increased in the brain tissue of these animals. There were increases in the lactate, pyruvate and phosphocreatine adenosine triphosphate ratios, consistent with tissue anoxia, and increased energy consumption in brain tissue. These findings were interpreted as indicating disruption of cellular function as a consequence of blast energy transfer along perivascular and periaxonal spaces to the brain.

Further evidence of dynamic pressure wave effects on the CNS and peripheral nervous system is provided by an experimental study in which 22 unanesthetized pigs were exposed by a large diameter (144) spherical muzzle directed at the left thigh from a muzzle-to-thigh distance of 100 m, velocity being around 1000 m/s. Pressure transducers were implanted 1 cm beneath the surface of the brain through skull holes in the left hemisphere (region 10 mm of high frequency (100-2000 Hz) electrical pressure waves were recorded from the cerebral brain tissue 200-700 µm). The mean rate of the measured positive peak of the wave was around 150 kPa. Pressure peaks from similar waves directed via transducers placed close to the animal, either on the right thigh reached values of 100 kPa. Animals were killed and fixed with immersion glutaraldehyde either immediately after exposure or 48 hours later. Microscopic examination of the brain revealed no gross disruption or visible displacement of the brain, brain tissue. Light microscopic examination demonstrated similar arrangements in the hippocampus and dentate gyrus of neocortex. On ultrastructural examination there was a reduction in the number of synapses, especially in the hippocampus in the hippocampus. Chromatin was condensed after 48 hours in many Purkinje cells in the cerebellum much like Mink disease.¹⁴ All these changes which were evident within a few minutes after the impact and persisted at 48 hours were also observed in the cerebral spinal cord, optic nerve and other parts of the brain. Similar changes were seen in the substantia nigra and the pharyngeal larynx in addition to deformation of the vagus sheath.

Arrows from interviews of witnesses that show intense postures or postures after the lower limbs to be a particularly common symptom.¹¹ The following description from a Naval Officer after his ship was impacted is probably typical. The witness also refers to suffering internal primary blast injury, particularly trauma following concussion blast:

It is hard to describe exactly the effect it had on me, as medical terms, but it was just like a hand being placed against a gut and being quickly withdrawn. Together with a rattling jolting in of felt after a sudden darkness occurred. I thought that if it was a bomb there would follow as I attempted to turn over as to my back, but found that everything had gone smooth from this point down, and I could not hear or see legs. This confusion lasted for about an hour then a tingling sensation like that of pins and needles, set in and the movement of my legs became more or less normal again. I could not think about the 400 tonnes that landed on me as was damped up on a rope and helped down to the wreckage, the shunting of the deck still left in the fact I was back on deck and did what I could to assist. The confusion probably was, as thought of my own self for 1 minute afterwards feeling no further effects and after landing and going to bed in the hotel when several people gave me a word of particular interest as to my condition. The deck was open at that time as evidenced by the fact that I first saw that island of a normal colour was being passed. This continued for a week, but the deck motion and pain continued for a month before becoming less frequent.¹²

Whole thermal and experimental problems exist for neurological damage, such as directly by the shock wave, much more extensive by the effects of air emboli in cerebral vessels, a mechanism that probably plays a more significant role. Air emboli travel to the circulation via decompression, bubble embolism is potentially blast injury and the pathophysiological effects of air embolism were described in Part I of this review in which this review is related.

Visceral signs of blast damage to the CNS involving limbs and paralysis were described in large rabbits and dogs following air blast

injury.¹³ In a later study normal cortical activity was recorded in two rats and two dogs was stable electrodes for 10–30 seconds after blast exposure.¹⁴ Cortical activity then disappeared but remained normal after 30 minutes. Consciousness was restored 30 minutes later.

In experimental animals German workers observed that with subjective exposure of the head to underwater blast the brain was not noticeably changed in structure or function despite Td reported permanent skin burnings and damage to the convoluted lung apices 17 h after the pressure and heat created upon dogs after underwater blast with the head above the water with exactly the same as above observed after exposure of the whole body to air blast. Short findings and those of others¹⁵ were attributed to the effects of oxygen embolism. Central artery Doppler ultrasound studies have demonstrated absence of intracranial bubbles in blast exposed animals up to 24 hours after exposure¹⁶ and exposure of air into the neural tissues of experimental animals may reproduce many of the neurological signs seen following blast exposure.¹⁷

German workers also demonstrated cerebral embolism in eight of 24 dogs killed by underwater blast and six of 14 killed by air blast. Air emboli were also shown in various sites, including the brain, in 85% of over 400 animals examined after blast exposure.¹⁸ Of 30 rabbits dying within 30 minutes of blast exposure Swedish investigators found cerebral emboli in 12 animals, particularly the head, neck, and the cerebral plexus, often in such quantities as to give them the appearance of a rope of pearls.¹⁹

Incidence of cerebral air embolism in human blast injury is rare probably on account of delayed gas mixture concentrations. In 5 fatalities from air blast cerebral air emboli were found in 17. Air emboli were observed in the spinal cord in eight survivors in 5 immediate survivors of underwater blast 4 of whom subsequently died. Air emboli were demonstrated in the post mortem at subsequent post mortem examination of one of eight patients who had undergone hyperbaric therapy. He had also suffered concussion with general and respiratory distress (PulF) which may have increased the risk of embolism.

Skull injury

Published reports of internal limbings describe many cases of traumatic intracranial particularly

of the lower limbs.¹⁻³ In a more analysis of 129 landing casualties there was a mortality rate of 14% associated with such injury. Of 52 survivors sustaining moderate amputations as a result of explosion in Northern Ireland only one survived.⁴ Of 100 amputations obtained from bomb blast at the same period between December 1967 and January 1968 79 amputations were identified at 34 people sustaining one or more amputations.⁵ Death in these cases was probably due to associated central injuries reflecting the magnitude of the force necessary to cause this injury. If amputated these close enough to an explosion to suffer amputations are unlikely to survive the effect of the blast wave. Traumatic amputations, due to shrapnel and air movement may therefore serve as a useful marker of injury severity and indicate the need for aggressive management.

Analysis of injury patterns in 16 fatalities with extensive lower limb amputations in Northern Ireland⁶ showed that amputations rarely occurred through joints and that the initial high-velocity was a particularly frequent site of limb avulsion, a finding revealing that most air survivors.⁷ Interestingly limb and torso injury was rare and it tended to be confined to the level of amputation suggesting a primary cleavage of the torso by the blast wave. These findings reflect the prior belief that amputations resulted from simple violence by a flying mechanism. Using computer modelling the authors concluded the coupling of the blast shock wave into the torso was probably responsible for initial displacement before penetrating evidence of the stipulated tearing by the dynamic overpressure.⁸ The theory was convincingly upheld by the results of exposure of gelatin embedded gas bag large torso to the dynamics of an explosion charge.

Summary

Primary blast injury remains an important cause of military and civilian trauma. A recent sponge in urban terrorism serves as a reminder that all clinicians should be aware of the specific effects of explosive devices. It is hoped that this review goes some way to assisting Medical Officers understanding of the unique mechanism of injury.

References

- 1 Pollock LH, Type A Thermal Injuries: Lessons learned from Belfast to Bosnia and Iraq 1998. November 1999:276.
- 2 Mill PW. The effects of high explosives on the central nervous system. *Lancet* 1954; ii:151-155.
- 3 Anderson R. Comments on the problems of blast injuries. *Proc R Soc Med* 1961; 54:171-180.
- 4 Cohen B, Shaskan GB. Pathologic aspects of amputated limb injuries in war. *Arch Path* 1966; 46:17-24.
- 5 Rice C, Singh L, Lee MB, Ng H, 'The EPB Long SA. The spectrum of injuries and amputations in blast injury in the old Irish Republican Army. *Arch Surg* 1992; 127:217.
- 6 Campbell J, Bates J, Mill PW, Rice C, Anderson R, Pearson J, Chambers L. An assessment of the central nervous system in the general spectrum of primary blast injury. *J Trauma* 1988; 28(Suppl):128-136.
- 7 Pearson J, Harrison RA, Shaskan B. Primary wave injuries in the central nervous system by high-velocity missile trauma: report Part 1. Local and distant effects on the peripheral nervous system - a light and electron microscopic study. (in press). *J Neurol* 1996; 243:161-165.
- 8 Pearson J, Harrison RA, Pearson J. Primary wave injuries in the central nervous system by high-velocity missile trauma: report Part 2. Distant effects on the central nervous system - a light and electron microscopic study. (in press). *J Trauma* 1996; 40:249-258.
- 9 Harkin SP, Adams AJ, Kerr DF. Bladder compression injuries of the children at war. *Br Med J* 1962; 1:144-146.
- 10 Gaulty 'Highball'. The Anatomy of surgery of the war. 4th ed. 1943. 46:3-497.
- 11 Gosselin AE, Moore FA, Waksak CPB. Abdominal injuries due to underwater explosion. *Br J Surg* 1993; 80:24-30.
- 12 Gosselin E, Rice DF, Shaskan BT. Injuries produced by blast. *Arch Surg* 1963; 97:375-385.
- 13 Miller T, Brown T. Blast injuries of the liver and spleen. *Arch Surg* 1976; 106:24-30.
- 14 Richmond DL, Richards W. Artificial and natural blast injuries with animals. *J Trauma* (Dallas) 1986; 26(Suppl):228-238.
- 15 Harkin GH. Physiological effects of air compression. *Am J Hygiene* 1926; 47:265-274.
- 16 Korte PL, Shaskan BT, Anderson R. Physiological effects of blast. *Quart* 1963; 1:151-159.
- 17 McCaughey J. Physiological effects of blast in air. In: *German Chemical Warfare* 1959; 94:1-124; 97:1-174; 107:1-107. Washington DC: US Govt Printing Office.
- 18 Moore FA, Duncan MC, Chatham GE. Abdominal gas injury after blast injury. *Proc Am Soc Med* 1971; 106:1233-1235.
- 19 Dwyer H. Blast injuries. In: *German Chemical Warfare* 1959; Vol 2 Chap. XXV B: 1274-1281. Washington DC: US Govt Printing Office.
- 20 Chamberlain CJ, Hudson R. The confinement and the cause of death in blast injury. *Med J* 1952; 4:120-122.
- 21 Riecke R. Pathology of blast effects. In: *German Chemical Warfare* 1959; Vol 1 Chap. XXV: 1261-1271. Washington DC: US Govt Printing Office.

Training

Band Aid, First Aid, Lucozade

P J Wagh, K Boulton and M Thompson

The Royal Naval Lifeline Institute (RNLI) is wholly dependent upon the support and efforts of a large number of volunteers to run and operate the 426 lifeboats around the United Kingdom. Historically, such a Lifeline Region was allocated an armed (Hawsey Medical) officer, centrally a General Practitioner from the local area who was responsible for first aid training of the crew. This system of formal training was superseded in the early 1970s with the establishment of Mobile Training Units that visit each lifeboat station every four years. As a result of its use of its numerous volunteers the Whitstable Lifeline District has an annual first aid competition. The Don Green Trophy is the form of Lifeline volunteer certificate presented to the work of an former Hawsey Medical Officer who died in a railway crash in 1977. Since 1977 the trophy has been competed for by selected crews and judged by staff from the headquarters of the RNLI.

Band Aids and Lucozade

In 1979 the Royal Naval Air Medical School (RNAMS) was located at Royal Naval Headquarters (Seaford Park) (Hove) (Brighton). As a well respected and highly regarded centre of excellence for first aid training, the staff of RNAMS were invited to participate in the event. At the time the RN competition took the form of a 1000 yd race to add to, during the event scenario. However, probably the staff upon arrival were more formal (RNLI) crew wearing a crew's overalls and an absence of team participation. With the consent of all crew and in year savings, the event has a relatively informal dress making RNAMS staff to

practice life saving techniques in an environment similar to that found in a workshop, a crashboat, Genoa or RN signal centre.

Planning

As with any exercise that involves the safety of personnel, serious or otherwise, detailed planning is of the essence. On 4 October 1999 a team of seven RNAMS staff were dispatched to Whitstable to assist in planning the scenario and ensure that all aspects of safety were considered thoroughly. It is quite difficult for a simulated scenario to occur from a reported lifeboat with both life strapped together and their arms in a



On 15 October 1999, a group of RNAMS staff visited the RNLI to see equipment and training facilities.

Virginia Greenwater Wagh, a President of the Council for our 'National Maritime Fund' and the President of the 'National Maritime' in the United Kingdom. On 14 November 1999, the Officer (Medical) from the RNLI and the Medical Officer (RNLI) from the RNLI and the Medical Officer (RNLI) from the RNLI.

ding? Satisfied with the safety measures in place, the RMLJ inspectors set the scene to give an indication of the likely casualty simulation requirements for the first day.

1000H-10.00h¹⁰

The scene is set. The mobile shell taking heat. Casualty M is operating in the Thomas library and is recovering his gear. During recovery, the crew notice a change in number of unknowns again is trapped in the gear as it is hoisted onboard. When it comes ashore, the crew see that the casualty is looking a dark, yellow-green substance. Delivery with the situation, the crew attempt to remove the casualty but as it is disconnected on deck there is an explosion leaving three casualties, one in the land and two on deck. Using standard techniques the RMLJ staff will maintain the injuries associated with a blast and thermal burns. Three casualty fracture dislocations of the left elbow, wrist and tibia to the foot and chest, fractured lower fibula and the hand and wrist injury, with all casualties in a state of shock and dehydrated with two delivered by the Med.

Competition Day

With the casualties prepared and the Chief Petty Officer M.A. armed with an ample supply of 'casualty blood', the scene starts, three way radio, visual and sound by the scene in the Thomas library. Meanwhile back at the library station the competitors are briefed on the rules and judging process. There should have been training for this as a competition and will be judged by an RMLJ medical panel consisting of Medication (Howard Lee and Tim, South) awarded by the RMLJ staff not involved in role play. The Deputy Inspector of Leithport, Mr Alan Ryan will be assessing the teamwork skills of the team competition.

The command alert is raised and the competition is on. The aim of the exercise is to use teamwork and first aid skills to deliver a safely and take casualties to the casualty. The highest scores are only given single to winners for Leithport A and they have to conduct a thorough search of the area. When released the taking record the teams have to work through the Chief's approved bandage supply of 'casualty blood' to treat the injuries that they discover. With the RMLJ staff acting out the role of shocked and screaming survivors. Later to 'Jack', who has had a major 'near' effect on the highest scores have a candidate and all

challenge. Having made an accurate diagnosis of the injuries and applied appropriate first aid, the crew then have to effect an appropriate transfer of the casualties to their life rafts. When in the hands of the Medical Services the competitors score.

It is widely considered that the RMLJ crew benefit enormously from this annual exercise not just in teamwork and first aid, but in time in operating and team building. As a result of training that is putting together and compete in the Royal Navy with Crew Resource Management. With a call-out rate of just over one week the Wainwrights finished in the first hour. With very few last candidates within this call out training there is a considerable degree of apprenticeship concept the crew as to how they would handle a real and complex first aid scenario. The fundamental benefit must be that with proper team training and guidance ensures the casualties identified in the RMLJ crew the only game. Considering compared with an edge of uncertainty level in a complex approach and enable logical and informed casualty in training.



ALM Gills's prepared in the previous after first casualty.



First officer team of HMS St Albans RNLI training ship at sea in July 1998

The training is in the 12,000-tonne, RNLI training vessel, *St Albans*, currently on important training and education passage for the RNLI's staff. Young Landing Hands and crewed components into the CPO's role can all learn from appreciating the circumstances and operational circumstances of fellow "personnel". I have now attended three Don Dumas Trophy competitions and met three different RNLI superiors. It is unlikely they spent time in a museum ship but it is interesting to learn of the personal aspects that the RNLI's commitment with White Star Lineboat is having. What so many RNLI vessels located so close to RNLI fleet, they throughout the UK. I often wonder if the Principal Medical Officers of other establishments would consider establishing a similar relationship. I am always available via Internet, even if my appointment diary is full. So if you think your department would benefit, is a good idea?

On about the role? The RNLI is a fairly new, of maritime voluntary working for a ship. They are open to develop their laboratory and test and study, and when all work my set is over to a lot of staff building in the more relaxing atmosphere of the local hospital.

Actions/decisions: We are pleased to acknowledge the contribution of Dr. Sargent and Lieutenant Commander Ahmed to the preparation of this short paper.



RNLI does not only as a training ship, but also as a hospital ship, as shown by the St Albans

History

The Naval Medical Service last Century and into the Millennium

Surgeon Captain George A R Orr OBE writes from his home in Mallorca.

Much has happened this century and the Naval Medical Service has not been exempt from drastic change. It is not the only one to have witnessed these changes but I know there is a profound tale past and one perhaps little known elsewhere.

When I joined for a Short Service Commission in 1949, a year before my parents' grandfather had been Admiral of the British Royal yacht for 28 years up until 1908. I naturally wanted to establish some continuity after the Revolution and I had to do my Medical Service. I applied for a Short Service Commission in the Navy, was not taking Medical Service then, they had to send to Surgeon Vice Admiral Randleford, who was Medical Director General, asked me who I wanted to join the Navy, and whether I had any Naval connections. I could think of no better reply, the nearest public service was Queen Anne's School, which with laughter and dust, The Navy made me sailor and for a moment I thought I would not join my medical due to the involvement of my day then. This is really only relevant because the death of my father, connected with Lord Louis Mountbatten's father joining the Naval Medical Service into uniform at the beginning of the century, although the Surgeons of the Fleet were accepted as Officers and gentlemen a century earlier. We put them on equal rank physicians. It was only at the beginning of this century that they were granted the red clinician belt and gold stripes of rank which were the uniform of other Royal Navy Officers. But that we were usually on a par with the Treasury.

My only other connection, with the beginning of this century, was to be the doctor to a cousin of the founder of Naval Medicine at the First and, Copleston House the Royal Yacht Museum and, where I studied and converted to the Museum in Harlow, and trying to establish the same gene grandfather had actually presided via school of the Civil Service, museum where only where passed the career

joined the "Wardroom bar" of the Royal Yacht Museum.

When I joined in 1949 there was no art of getting back to the necessity of per over time, surgical provided, today, patient and senior Officers' patients were not encouraged to be involved in medicine. On several occasions (because of the essay) I was told (usually by my Medical peers) that I would never be promoted. I carried on as best I could.

A brilliant, decorated Officer in HMS Vernon left the service of us with a knowledge of sword drill, how to judge between hand-to-hand, a more dark, as that the fact, and what to do about possible status in cells. We also learned that Senior Officers were never Gods, and that when the Officer in charge of the career was in the King as well, was made as if we thought that we were Surgeon Commodore THO. O'Rourke. There were no few of us, the service needed more medical Officers, yet it was clear for ground about establishment needed more than one MG, and a high career the rate of a medical input as it was.

I was joined in HMS. If the war (initially in play games) I was supposed to be good at a short training contribution as for the one, joined for four two O'Leary. My Surgeon Commander who had been Medical Officer in Charge of the Hospital Ship, Mary during the war, declared that he did not understand, but was there to teach me about the Navy. I was therefore not able to be on at Portsmouth Command at any time, which means no army games. I did have to count square, later, many me by one as the quantity made of medicine and as far as history is concerned, I Count. Meanwhile my Chief Petty Officer, the first Chief Medical Officer held in Nelson's cabin onboard HMS Victory, he was an old hand, with a good history, and got away with it. To my relief he was pushed elsewhere.

However I did learn a lot about the Navy. A Surgeon Lieutenant was paid a little more than an Executive Lieutenant, and therefore did not

have to work in his family to survive. This, of course, is no way compensated for the medical training which our parents had paid for and more importantly at the time because we were not paid anything which did not count as, years on, a considerable pension which took little or no tax to pay and took care to cover the general upkeep of this money you might have spent on your super. The Dental Officers in the Fleet² establishment were all at the time, Admiral's men. Their first mission on my appearance on the Warship was to ask if I was married, followed by a sigh of relief as they explained that an Officer was useless in the Navy if he was married, before becoming a Lieutenant Commander. It was unusual for ships at the time to be away from UK for three years (it is rare). We shared every night for dinner.

My first Quoniam mission was to take hypodermic effluent for the use of detached rollers on the waste sheets of Naval patients. For economy Officers, assigned as boats full of paper rollers, and only on special occasions did exceptionally interested washed down rollers appear. When I discovered that this original reason for this present was positively medieval—a waste of both water while saving on the luxury of an extremely costly shirt. I asked in the washbasin if it was a useful cleaning of anything when would have I hope I contributed to the recognition of an attached roller as a part of uniform. As a medical adviser on infectious outbreaks posted with 500 boys with the same age (Hodder agreed promptly and sent an inventory card). The cash they only had about £4 both the advertisement blocks became a hospital.

Before I was posted elsewhere, I remember two Admiralty Fleet Orders, which I found amusing. One which allowed sailors with common law wives to receive marriage allowance. It is worth noting that if you got the Captain's permission to get married in three days and you were under 25, you only got a ruling's marriage allowance. The second Order showed that having of boys as a punishment. They were white ball having games, daily for the prison, which was carried out by the Marine in Arms. I did not enjoy the compulsory attendance of the Medical Officer.

My next ship was the 'Sheep Head'. A very large gun boat cruise visiting the Bay of Biscay. Admiral Andrews, when he was on board, and Fleetmaster of the America and West Indies squadron based at Bermuda. We showed the first naval both America for nearly two

years (see Naval Sea service, so that they did not have to pay for the equipment for overseas service). As these letters and attention were necessary I had a letter from the Surgeon Commander only lasted when Officers, a medical party for six landed roughly every two days. They constantly required gallons of pounds worth of overseas costs, but though the Captain and Admiral paid half from their own pockets, the other half the 45 Officers paid the rest on a regular basis. They did not place the Warship Officers, who had been more distributed in the area and became responsible members of the Warship. Lastly dollars, were still received, which meant that one knew as good as when, gladly paid up where our families might have had to stop at, as it is in the other hand to help.

1950 onwards

I do not think it possible to follow what has happened in the Naval Medical Service within a circle of this long-term knowledge. At the time we had three hospitals, about 1000 about 100 Medical Officers, and war quarters in hospitals such as 'Hammersmith and St. Thomas' quite apart from war quarters in UK, several times and RNM Hospital and RNM Southdown at Plymouth.

The National Health Service was in its birth pangs. As I had lived with a medical background between the wars, I was well aware of the problems that this meant. Just the introduction of a national service required some in some. Consultants had always worked from an hospital which were largely supported by charity; they got their paying private patients largely through the reputation they established by the treatment of patients referred to hospital by GPs. Though this did not affect the NHS, the exposure of medical training rapidly fell, a long time to produce, as the new special cases, especially if a new time and money was heavily encouraged and when referred, referred was at night took care of numbers. If reputation was required it was provided by the honorary consultants to the Navy, who I believe considered this an honour which reduced their private appointments and they enjoyed their new cases, who provided and finally made members of a Naval Warship.

So what was the philosophy during behind the NHS and what did the Navy require it to do. The medical officers on board ships had such large white quarters with dark walls, mostly with a Pines, X-ray machine, Radiography machine

were practiced with minimal distress taking up a lot of time. Anything complicated was limited to what was possible.

Naval hospitals were tasked with returning sailors as early as was reasonable. This meant the rehabilitation and reconditioning played an important part. When it was realized that full time would result in everything presented to patients. Inpatient medical examinations before were entered then most personnel returned were as fit as possible. The days had passed where an able seaman had to have enough time to share a ship's life, as time for nothing did work there was entered. The units that beyond the days where HMS Haver, entering 480 to one ship-entire with 800 because 10 would be lost by enemy action and left divided by enemy and related distress.

The Navy at now in 1945 had no one for walking wounded or light cases. The battle had no more time. The patients of the second half of the century was before that all personnel on board were becoming more expensive and more highly trained. Ships had less and less space for accommodation. While the resources of the NHS were becoming more than of doctors and the hospitals more stretched to provide the services required. I will take the 1940s as a case study (see fig 1).

As the Naval Hospital gradually disappeared and the community moved more and more away from the sea, the war was directed by the Royal Navy and management to the Commonwealth. This led inevitably to the remaining hospitals facing the problem that a permanent career service is incompatible with the practice of medicine. Forwardly and before conditions were established in the NHS. Medical Officers of emergency had without formal management training, had to shoulder their expertise as became medical administration in order to achieve higher rank. At the same time the NHS had established a private structure which all specialists could work within the numbers have imposed, and subsequently could achieve their needs for development in their field as a consequence. This applied to all specialists in different ways including GPs. All administration was reflected in these personnel. The Royal Colleges were put together a career structure for each specialty. Clearly the NHS (and the medical services of the other armed forces) had now had management. The NHS had put together a structure, which was compatible with the pay and career arrangements of the Royal Navy.

Pursuing all this was still in, but real factor it was not possible for many senior Committee Officers to occupy a permanent branch where pay and advancement would not allow them. I wrote two articles on the conditions of the profession. The Naval Review. Knowing that it would be responsible to some 1000 pay above that of the Committee branch. I observed the responsibilities of the Captain of an aircraft carrier and capital value of his military and compared it with the equivalent in civilian life. I took everything into account which might give the Captain better income. I could hardly say that there was no comparison. If I remember rightly the equivalent Captain of industry earned at first four years to make with an earnings related pension. The Naval Captain's career path, danger factor, and occasionally play.

If anybody read the article it had no visible effect but to say that a man had opened some people's eyes. Some of my senior Officers practiced further down for my career.

We are familiar with pay, advancement, an relieving medical profession. There was much to be learned. It was Vice Admiral Sir James Webb who was really determined to see the NHS with the other services, following in his wake. He was loyal to the RN and never failed to point out the essential experience we had. We had to have medical trained Medical Officers and trained them in the language of Naval Medicine. We had such detailed knowledge of being medicine that the Government had to call us in to every further discussion on the health care of industry. We had unique knowledge in surgical medicine, mental medicine, infectious diseases etc. With experience offered to work on a specification of agreement with the Royal Colleges and with the Board of Admiralty. He asked me with producing a Senior Naval Medical Officers Administration course. He also did his best to ensure that our hospitals would not be closed and continued. As we all know at times the Dornford experience mirrored the Royal Naval Hospital in Portsmouth. I can still describe that as NHS hospital can cope with a wing under the Naval Discipline act, on one floor with its waiting list to get priority as Naval Personnel. We are never a service out of a situation where it presented the Royal Navy is constantly on active service. There is now the prospect of losing HMS Haver. I have yet to see a really sensible solution to the requirements of the service.

Many of my later years in medicine were devoted to collaboration of the Medical Services

of the day (unofficially). The more I studied the subject, the more convinced I became that the role of medical officers in the fleet services was anomalous in nature on the field, and I think my colleagues in Brussels on NATO committee agreed.

At any rate they needed different social training.

Revolving

So as often in recruiting I always felt the Armed Forces Medical Reserve Body not provided the problem from which I wrote the evidence for the 1944 Armed Forces Committee (I was A/Sec to the RMA at that time). I never quite followed the pattern which during that period

fully had taken establishment was, when I was appointed the junior Assistant Surgeon General told me doctors such as I (and others) felt. I inherited from Surgeon Commander Baskerville a plan for Medical Cadets, which had been approved by RMO but not yet implemented. It had more merit than was credited to it, but it was the time before the time delay for nearly all Naval Officers.

In essence it was an impossible task: we will pay for the last years of your medical training, in return for 4 years service on the RMR. This was considered the RMR as a Surgeon Sub-Lt and put uniform and allowances. It meant in the nature a reversal in family income of at least £1000 at the time, at those days, a lot of money. I joined all the Medical schools of the United Kingdom (training and entering suitable candidates, as the RMR had always had many fresh doctors, I also went round the Republic) naval uniforms to look for willing recruits.

It was for the time being a breakthrough. The role had the two fully cadres. Selection was not compulsory. There were Admiralty policies largely which all Officers on the RMR had to pass. Influenced by Medical Selection Boards in Fleet. One could not 'drop' for combined Naval Duty anything that could cause personal income, religious non-conformity or closely proximity to children.

It did not, however, solve the problem of hospital specialist departments. Specialists were leaving where they could for better prospects in the RMR. We recruited specialists and commonly better able people and did not keep them for long. Most of all, the reasons of loyalty, desire of change or personal problems stayed on the hospital, a long-term commitment, was a serious handicap, and it also appeared that we could not build operational demands.

The Royal Naval Reserve

While I was drafting up the evidence scheme I was also (as Medical Officer in Advanced Commanding Reserve) The Reserve Committee were doing around the coast of the British Isles each had its own management and they were very strict. The medical role was generally the largest cadre in the Reserves, and we relied on them heavily. The RMR in the time were obliged to be there, but at least one week more from a year for training, and then had a good job (often as for them were better at sea and on shore) in the hospitals. When there were other service commitments there were always those who could make themselves available.

Into the Millennium

It seems very apparent that the Royal Medical Service is fulfilling its function with real difficulty. It also appears that the RMR is no longer in step and goes primarily in service requirements. While that has been improvements in recent years, a few remain probably impossible to give correct direction the party in pay and personnel with their RMR collapse which they have caused and desired. Further, in the medical climate, at the end of a career, some had to be in a way to avoid someone else a leader in the RMR as a dilemma.

Solutions will however have to be found. The Modern Navy is so sophisticated and the personnel so costly and highly trained that they must have the best medical care available, as in the hospitals I had the solution might be for the Reserves (Clinical Committee, to meet Naval personnel on private hospitals).

The role of Reserves should be enhanced where Medical Officers are required on ships and aboard with the RMR young surgeons, whether on primary or secondary care, all the forms of specialist support. When the research and purely military operations are considered, clearly a way must be found to encourage volunteer medical staff on terms which put them on a par with their civilian counterparts. For all concerned it is clearly time to make pay in person.

I do not save the tale of the Surgeon General Pelling a better time on the situation, no longer helped. I passed a period and a short time. Now that probably I am as a surgeon. Time may have passed and medical change is likely to have different emphasis, but we will need the same structure. If the staff have space I hope at least a well given a little food for thought.



Figure 1. Repair to a large T-Class decompression chamber

at first thought themselves and personnel of the Thetis Submersible Escape Apparatus (DSEA).

However, the later Tribunal concluded that there had been 'involuntary' opening of valves which prevented the board air escape under high pressure. Nor were the dangers of compression with pure air due to CO₂ poisoning and the effects of cold fully appreciated at the time.

'What had gone wrong? The chain of events in the days were filled of failures acting sequentially:

- Choking blocking of a vital oxygen tube was used by humans, correct
- Opening of a rear door while the bow cap was against the sea
- Failure aboard Thetis to close the first watertight door between the Tyle Space and the Topside Storage Compartment
- Failure to equal water from the two flooded compartments
- Failure of those aboard Thetis to escape by DSEA, except for the first interview due to the effects of carbon dioxide poisoning
- Failure of those on the surface to render effective assistance

In the later report:

- Mr McIlroy, Chief Salvage Officer of several deep-diving teams at Scapa Flow did not arrive at the scene until late evening, 2nd June

- Submarine the Mary + crew deep diving ship to anchor off inventory on Loch Fyne with a very fit team of local divers invited to work at depth of 200ft, only arrived at Thetis in 0500 on 2nd June

- Captain Macgregor, Chief of Staff to HQ Submarines did not arrive at HMS Warblington until after 1100 on 2nd June. 36 hours after Thetis had finally disappeared. The Tribunal noted 'delays there for the one operation under the orders of an experienced senior officer with unimpaired authority

There are the bare facts of the disaster. I shall now try to explain them in more detail.

Thetis was the first of the T-Class to be built at Cammell Laird in Birmingham and was commissioned on 4th March 1959. Her Commanding Officer was Lieutenant Commander Guy Johns. During his trials in April, a watertight door for access to the bow had been found insecurely and her final design trials by the Gorchow had to be abandoned as the forward hydroplanes, jammed. The diving trials were therefore postponed until June.

Thetis had six, numbered 20 inch torpedoes when ordered on the home. They were arranged in two vertical rows of three each, numbers 1, 4, 6 in port, and 2, 3, 5 in starboard. There was fitted with one diver, the bow cap in the standard red

and the rear door which opened inboard in order to load a torpedo into the tube before being opened.

Obviously the two torpedo rear doors should not be open together in the same way? Each rear door was fitted with an expansion tank in order to take off them was the water in the tube. Unfortunately a few days before the voyage in June a period had occurred from a Central Land telephone had reported submarine activities in the vicinity of the island but had failed to mention that the rear rack of No. 4 tube was empty.

Before leaving the bay on the morning of 1st June both the Central Land and Admiralty commands had noted that (travelling off) problems with the battery, making the submarine was light on one side especially forward. It is possible that it was decided to fill one or more of the lower torpedo tubes to lighten the stern before getting away. This is speculative. When a man is down in the boat that when the door is not back place that otherwise the submarine was not light forward or too heavy.

THE FIRST OF JUNE 1940

At 0940 Dore proceeded to sea down the Mersey for her first duty. In addition to her normal crew of 51 officers and men, she carried an additional 100 including 70 Central Land personnel (about 100) the ship under the direction of the submarine's officer, naval officers including Captain Dore, a Marine, four other naval officers, Accompanying Dore to sea was the Harland and Wolff tug *Clive* and 10 other boats started in advance. In addition to her Marine she carried a moral Lieutenant and a Squad Telegrapher. Lunch was served as Dore cleared out into the deeper waters of Liverpool Bay. At 1340 Lieutenant Commander Bales gave the signal to clear but the submarine seemed reluctant to change and just before 1500 she was observed by Gibraltar to go under suddenly and disappear.

What had happened to make diving so difficult? After a time it had become apparent to those on board that there was visible light on her forward. Lieutenant Commander Bales therefore ordered a check to be made whether Nos. 1 and 4 tubes (the lower external tubes) were full or empty as by the daylight was obvious they should have been full of water to compensate for the lack of torpedoes. The examination was carried out by Lieutenant Woods, the torpedo officer using the test cock

inspection procedure but, as he, later wrote, the test cock of No. 4 tube was blocked and gave misleading information. But the tube then open to the sea Woods remarked, a jet of water would have shown the tube to be full. He did not, however, and the water which was a few inches deep then ran into the stern into the small hole in the sea cock looking lower to continue on privately. He then decided to inspect the interiors of all six tubes directly but felt he had to make sure that the two caps were fully down. The two cap mechanisms were located right forward between the two banks of tubes, in a very confined space. The indicators were on the each diameter circular dial and pointers, operated by the same which opened and closed the two caps. Lieutenant Woods reported the indicators and was satisfied that all were on the 'SHUT' position. Now look at the indicator on the 'many' mechanism which always operated to last Dore in a way of trouble. The operation of the two cap indicator of the lower torpedo tube had given misleading information as, when the submarine was salvaged the indicator for No. 4 tube was found to be on the 'OPEN' position. Why was that? The reason of how and especially when the two cap came to be open has never been satisfactorily explained.

The indicators were arranged externally one above the other in the sequence order of 1, 2, 3, 4, 5, 6 so that the lower indicator i.e. the most accessible was for No. 5 tube. Furthermore it was observed by a longshoreman on board of 17 that when the 'OPEN' & 'SHUT' positions were different on Nos. 3 & 4 two cap indicators (ON NO. 3 'SHUT' was at 5 o'clock, but on No. 4 it was at 11 o'clock, i.e. exactly opposite). It seems likely that Lieutenant Woods and Leading Steward Harbord, who Leading Torpedo Boring in the *Tide Speed* looked down the row of pointers saw them all in line and assumed that all two caps were shut.

Lieutenant Woods then ordered Harbord to open the rear doors of the torpedo tubes one by one looking over the two caps were all closed. He did not inform the control room that he was about to do so nor did he see, above water, pointers, which was Harbord Torpedo School practice. The first four were completely dry but on slowly opening the rear door of No. 5 tube, because the two cap was open to the sea, the door was being back and water rushed in to flood the tube space. The time was 2.34 p.m.

It is easy to picture what it was like for the small group of men huddled round cold soaked mattresses and struggling in steel deckchairs as the light had faded as he straddled the first of the series of heavy bulkhead doors with 15 inch-thick steel on which had jammed¹ however they succeeded in closing the door as the next bulkhead which they reached by a single quick, sliding wheel in order to prevent sea water pouring in the foreman and causing the release of chlorine gas.

The next few hours were extremely quiet as these very brave but unsuccessful attempts by men working either singly or in pairs to get out the flooded space impossible at first the forward escape chamber using DSEA in order to try to clear No. 3 main door and again drainage valves. Slightly all failed because of the symptoms produced by working at a depth of about 15 ft below the surface. It was now 7 p.m. and since that a speedy relief to the crew of the chlorine released by their own efforts was impossible because heavy had been released earlier and smoke caused hard to the surface but Grebeval was too far down to observe the latter and the way in one heavy had forced the way, while the other was detached from the hull by the strong currents in Liverpool Bay.²

Throughout the long night of 14/15 June while the sailors held a conference in the foreman of the main submarine the Command Laid men, using great ingenuity and with increasing shortage of breath struggled to save her from by pumping and had not and fresh water improving communications between the two separate chambers with considerable courage and ingenuity - so that by about 0600 hours this had appeared above the surface then, as the night was on the air became increasingly hot due to the build up of carbon dioxide. The few men who did not sleep finally considered the effort it took to hold themselves up the slowly slipping deck of the engine room to the after escape chamber and how difficult it was to breathe. Many of the crew were vomiting and passing and had watering of the eyes.³

On the surface, initially there were high hopes of rescue as the rescue was short was that there was sufficient oxygen on board to last up to 48 hours (although later like 14 hours) with double the normal crew on board.

However due to a storm of Lethargy at commandment with Submarine HQ at Port Beaulieu in Gosport there was a delay before the greatest help arrived. SUBMARINE HQ CA

submarine is coming) at 1415 and the ordering of a major search of Liverpool Bay, where the strong sides made it very difficult for the small tug Grebeval to give an accurate position of the missing submarine.

But after search on 15/15 an RAF search plane spotted what the pilot thought was a nuclear boat about 14 miles north of the Green Green Head Lighthouse but there was some confusion in signalling its exact position to HMS Porpoise, a destroyer at sea from the Clyde in Devonport and directed to join the surface vessel search.

Friday 14th June (Sunday) was at 0445. Some two hours later Lieutenant Commander R. H. White, of Porpoise directed to search further to the north. To his great relief at 0745 he finally spotted part of the stern of Thetis protruding out of the water at an angle of 30°. Her exact position was then signalled to the Submarine and the rest of them anxiously waiting for news and a was assumed that all would be well.

Small supplies dropped were dropped to let them know that help was at hand. But after 0800, two boats appeared above the water and Captain Green and Lieutenant Woods were rescued. They brought with them food, water, more, including a plan, to save the submarine and establish a communication frequency. May Greeny saying: 'KEEP CONSTANT WATCH FOR THEM ESCAPING THROUGH AFTER ESCAPE CHAMBER'. Both Green and Woods were suffering from CO₂ poisoning and there was some delay before a signal was sent to Liverpool to send two divers and one compressor to put into action the plan they had brought up as there on the surface were more escape.

At 0800 Liverpool (Subs) (Walter Arnold) and a Command Laid were in most Parts. There also surfaced among the DSEA and the after escape chamber into the air and Woods from a depth of about 20 ft. Both men reported that conditions in the submarine were grave and that unless something was done soon the remaining crew in Thetis must all perish. The rescue attempt then became a race against time.

The destroyer Porpoise had been joined by the submersible vessel Hydrog from Liverpool and a flotilla of new Royal Class destroyers from Portland. The currents were very swift of the warning to say close of the case of Thetis as they waited in case for there were no signs above the surface. A 50 inch wide tunnel was lowered around the stern of the submarine at 0745 but by that time when the first boat had



Picture 1. Captain H. G. Green R. N. (Rear)

appeared, it was decided to get *Wreck Master* back of the *Mercury* boats and *Midwater* holed on a boat from *Highland* made an unsuccessful attempt to open a machine cover and heavily (long on for the best part of an hour) to the slippery lead. But at 1400 the tide turned and ebbed strongly to the west causing the stern of *Phoenix* to turn violently and it was forced to abandon her attempt. At 1500 *Highland* came alongside with the *Liverpool* tug *Circle* in tow a hole in the stern but the first diving-rod too now proved too strong for the men and in 1510 the cable snapped with a loud clank and *Phoenix* did below the surface of the waves.¹ About the same time down below a further attempt to fix the after escape chamber had failed to free men had been made to open the hatch at the top of the chamber. As they entered in the *Moore* and *Lynette* boats with the deck at a very steep angle in the horizontal the door of the escape chamber was opened to let them stagger out. But the door

seizure by the effects of surface damage failed to run off the sliding valve which was still against the sea. The break of water is thought to have pushed up the already high level of surface damage so that any of the 90 men still alive would have been killed by the gas rather than being drowned.²

Phoenix was eventually salvaged at the expense of the 10th section of the rapidly despatch Party Officer Henry Parker, a naval diver who developed the hoist, and died as the decompression chamber blew down to assist the work in August. From then there was no crime, medical trial, or attempt to find out if he had internal scoring of the lungs due to old pulmonary tuberculosis which must have exposed his respiratory function. Moreover he had never had a chest radiograph.

The damaged submarine was eventually beached at Muller Bay in Anglesey just after the outbreak of war with Germany on 30 September 1939.

She was made seaworthy and towed back to Bournemouth on 10th November. Further repairs and it named *HMS Submarine Thetis* (which she subsequently served as an escort on Atlantic convoys and in stranding enemy shipping in the Mediterranean. On 10th March 1941, she was badly depth-charged and sank by an Italian torpedo off Cape San Vito on the south coast of Sicily with the loss of 61 men below and has never been recovered.³

I should like to finish with the words of Captain Green (Picture 1) as he spoke to the Admiralty witness on board *HMS Thetis* at Liverpool Bay and dated 4th June 1940:

He reminded his recitation of the tragedy:

"I wish to make known the very painful behaviour of the men on board *Phoenix*. I saw no sign of panic in any man and without a single exception all men showed great courage. Whenever anything had to be done men sprang to help and work when finishing became necessary men worked extremely and cheerfully. Men had and pushed and the final net forced down to within four fathoms up on the case when I felt I had no mind of completion and I cannot state any sign of the time which I spent in the war itself."

EXPLANES What happened in the last attempt?

1. Lieutenant Woods was killed as a RTU on a run to the South of France while serving on

Book Reviews

Survival for Nurses by Sarah-Jane Price
Adlard Ltd Aldershot 1999 ISBN 1 85311
52108 £29.95

This book takes the reader through all the areas which need to be considered when faced with an actual (and survival) situation. Recognising that passengers are unlikely to have received any training in this subject, a good deal of emphasis is placed on the opportunity for the crew to transfer knowledge and take charge in the event of any emergency. The book goes on to consider all the different modes of survival including shipwreck, ditching in the sea, wilderness escape, survival on the water, including the use of lifeboats and general methods of improvisation. There is a good deal of detail about the management of survival in lifeboats and the merits of different types of equipment which may be made available in a survival situation at sea. The section on gas agents at the end of chapter on fire and which includes contemporary scenarios is a not very easily administered technique in an offshore lifeboat.

The second part of the book is devoted to land survival and includes chapters on simple air, water and jungle. This section is also complemented by a chapter on first aid followed by signalling and rescue at land. It might have been more logical to have combined the two sections on first aid so as to avoid following in each case to the other chapter.

All the techniques which are described in this book are contained in the various rows on which are taught to military aircrew and in that respect there is very little which this book adds to the current body of knowledge and experience within the community. The book probably provides a useful reference for civilian aircrew although it must be said that the risk of making up a survival situation following a commercial (and several accidents) is extremely small indeed. Combined with the requirement to provide these techniques if they are to be of much use it is difficult to see how this book could be of any practical value to the travelling public. However it would provide a very useful reference for anyone contemplating flying over or under any remote or inaccessible parts of the globe.

Although this book is entitled *Survival for Nurses* there are other groups for whom the ability to survive in remote and inaccessible parts of the world is important. There are sections of this book which might be of interest to paramedics particularly in their planning being in front-line emergency or mountain rescue, fire services.

In summary this book probably contains no more (or no less) than the common sense to military aircrew during the course of their training. Military service of course also have the opportunity to practise and refine these techniques and this is considered of enormous value when it comes to the difficult part of employing them in land survival situations. This point has been made in the book and reference is made to companies which provide equipment and training but the implications in terms of cost are not addressed.

Sargento Commander P J Mough

President

General Air and Admiralty Medical Board

Guidance on Ethics for Occupational Physicians, 2nd edition. Faculty of Occupational Medicine of the Royal College of Physicians. May 1999 ISBN 1 85445 112 X, £15 (plus £2.95 post and packing which apply UK).

Occupational physicians are face ethical dilemmas distinct from other specialists because of the nature of their relationship to both employees and employers, which can place them in different roles depending on the context of their work. Employers and other employees are often at odds if the ethical constraints under which the occupational physician practices and of conflicts which may arise between the rights of the employee as a patient and the interests of the employer who pays the physician.

This booklet, one of a series of guidance publications from the Faculty of Occupational Medicine addresses ethical issues of particular relevance to the practice of occupational medicine. It is primarily aimed at specialist occupational physicians and those who act, their services. Taking the General Medical Council's

guidance is at starting point is consistent ethical issues as they apply to occupational health records and their dissemination. Issues for work health screening and occupational health research. This 30c address has been updated to encompass changes in the way occupational physicians practice with increasing consultation and by employers to independent companies for occupational health services. A new chapter on business ethics points out pitfalls in business practice in particular it draws attention to contracts for services which may contain requirements which are unethical, such as the disclosure of confidential medical information to the employer.

Inevitably this guidance emerges from some of ethics: "the accepted practice" which emphasising the need of occupational physicians and nurses to obtain and maintain appropriate competence. There is considerable repetition of the need for consent in disclosure of medical information and the need for the physician to be sure that the consent is appropriate: "this would have been better confined into a single short general statement of the principle followed by an application to various situations. Deviations in Sections 1 and 4 of ethical considerations applying to fitness for work and health screening is particularly helpful and usefully points out areas of the law that apply to the occupational physician. An appendix provides important guidance on consent, fit and fitness.

This book can be highly recommended to occupational physicians, other occupational health workers and their employers. It has been most valuable in the process of other specialists and general practitioners (other than those providing occupational health services) although much of its guidance covers the ethical aspects of medical reports for other parties, such as insurance companies.

Dr A. Fildes

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How to write a paper Ed. George M. Hall
Several editions. BMJ Books, London, 1999
ISBN 0727942348 £15.95

A well presented short text that took a promising addition to the backlist of any potential reader of scientific paper. The book is enhanced by contributions from the editors of some of the leading British medical journals including the *Lancet*, *British Medical Journal* and *Journal of Clinical Pathology*. They provide a wealth of knowledge and experience in the way to large writing a scientific paper and achieve successful publication.

Each chapter is well laid out, straightforward and easy to read combining the number and potential reader to focus on a specific aspect involved in the writing of a scientific paper. There are useful additional chapters on: Who should be an author and the "Ethics of publication" in the second edition.

My only criticism of the text is that little is said about the way of the underlying study. Although briefly mentioned in the chapter on "How to write an abstract for a scientific meeting" I think more emphasis could have been placed on this aspect in the first section which includes the Introduction and Methods. Overall however the focus on writing a paper for a journal is appropriate. I am it is particularly well written and provides essential guidance for the occupational writer.

Finally I thought the last section from chapter 10 provides the paper writer with useful insight into how their submitted paper may be assessed, and what can be expected from the publisher when their article is finally accepted.

**Surgeon Lieutenant Commander R.A.
Dingley**
Institute of Naval Medicine

Obituaries

**Surgeon Captain Alan Roger March CBE
RANZC Royal Navy**



Alan March died on 13 January 2000 aged 80 years eleven and a half months after joining the Royal Naval Staffy just three months after retiring. He was described as having a clean shaven face, strongly grey to his truly Daventry and his family Surgeon Captain Alan Shepherd wrote:

Alan March was born and brought up in Sheffield but trained in St Bartholomew's Hospital from where he qualified in 1961. Prior to joining the Royal Navy in the rank of acting Surgeon Lieutenant in December 1962 the two second FRACD appointments he had completed (the first had appointments in the NHS at Birmingham General Hospital) where he met Dorothy and they married in October the following year.

On achieving full registration he was promoted Surgeon Lieutenant in January 1964 and that April, after a short period of naval training at RN Barbadoes Portsmouth he was appointed to HMS Ashmole in the For List where he served for the next two years, gaining the General Service Medal (Military or

Compass). Following the move to HMS in Medicine at HMS Plymouth he returned to sea for some command HMS Plover where he sustained total amputation of his Right Service Commission in January 1967.

He gained Membership of the Royal College of Physicians that year, the first of four years in NHS Medical Surgeon/Research Assistant posts in hospital posts. Whether using of the NHS or realising that he could practice medicine away at the Navy within the Royal Navy in June 1971 Alan re-joined in the rank of Surgeon Lieutenant Commander on a 3 year Royal Service Commission. He was appointed to HMS Lonsdale which deployed in the West Indies. Later that year he was posted Separation at Medway and served in that capacity first at HMS Helder and then 1973 to 1974 at HMS Gibraltar. Following appointment to the International Hospital as a Senior Medical Research Assistant he returned to Helder as the Senior Separation in Medicine. Following three months in that grade in Malta and a further 6000 during the Cold War he appeared before RANZC and was granted Commission in Medicine. His first consultant appointment was at HMS Plymouth where, having been promoted Surgeon Commander in September joined the Naval Defence College Course in Liaison Services there spending an appointment as MED/Phys officer in London a year as Director of Studies at the Institute of Naval Medicine and then another appointment to London the next with responsibility for recruiting medical officers and cadets - and as SMO Reserve.

He was then able to return for four years in his first time, pursuing Medicine at Junior and RAN Plymouth before entering in full time as Chief Staff Officer to Surgeon Rear Admiral (Support Medical Services) during which time he was elected a Fellow of the Royal College of Physicians. In 1987 he returned to medical practice as Director of Naval Medicine and Consultant in Intensive at RAN Helder. He was awarded the Junior Officer Member of St John of Jerusalem in 1987 and in June of that year was promoted Surgeon Captain. He remained Director of Naval Medicine through a move to

to Consultant or General Medicine to RNM Physicians in 1962 and in the others to Harbut the following year – when he took on the additional task of President of the Medical Society of Surgey. He was extremely proud to be appointed Queen's Honorary Physician in 1996. Between 1988 and 1996, his love of children was recognised by his appointment as Chairman of the Royal Navy Children's Association.

Alan retired from the Royal Navy in January 1996 with many plans for his retirement including commencing an Open University degree course in the Arts, travelling to see his daughters and grandchildren in Australia and Canada and spending time with his beloved Doreen as their shared joy of gardening. These plans were quickly upset by the devastating diagnosis of chronic cancer in April 1998. Despite a major operation which left him without the ability to speak, attended two courses of radiotherapy and three of chemotherapy he recovered enough the disease to live for weeks with composure, dignity and by maintaining his sense of humour. Remarkably following his operation he started jogging again for a short period and persevered with his Q&U assignments and was delighted to achieve as a result work of 125% for his first year's work.

Alan was held in high regard by patients and colleagues alike. A kind, compassionate gentleman he will be greatly missed by his many friends but especially so by Doreen, his wife (and closest friend) whose 56 years, his children Helen, Cheryl and Stephen and his four grandchildren.

The Earl of Wessex and Nottingham Surgeon Major Anthony Sir Geoffrey Miles Thompson RRC wrote:

Christopher Whitburn joined the Royal Navy as a national service (NSA) in 1954 having attended the family business, an a subsidiary of Generalships. He did his initial training at Chatham Maritime and the Royal Naval Hospital, Chatham before a draft to HMSA. At sea and finally to the Royal Naval Hospital at Haslar. Having spent part of his youth in Australia, he always had a penchant for odd Americanisms and during his naval service had a black cat followed by a Chowhound. His brother recalls that the black cat came very suspiciously back in the mail bag which Christopher attached to a successful journey with a machine

gunner in his pocket! He used to change his surname to 'For a trip to London and usually had enough money to pay for his petrol.

I first met Christopher when he accepted my invitation to come to the Ceremony of the Back Bath held in yard of Haslar about 12 years ago. He not only did that gladly but was a tremendous success, earned friendships many long ago and became a great supporter of the Back Pay and Medical Pensions Staff Association which means a lot to him. Only two months before his untimely death he was at the Annual Dinner.

We kept in touch after the Ceremony, and I would help him find out things with people he was befriending or people he had in mind. He had a deep pool and interest in the Arab world and in the region, had a profound story disposition to read the Palestinian and Israeli currently polarising the Middle East. He became great in support of the people of the Western Sahara a former Spanish colony, writing independently, but obscured by the Kingdom of Morocco. Through his charity, Rainbow Rivers, he supported refugees in India and aid refugees from Morocco's role. I very much wanted to go with him as he had Rainbow Rivers up to the Western Sahara, but I was still serving and locked into the Ministry of Defence, however, one of his naval friends, Peter Okey did go and he was delighted to have an old shipmate with him.

In the early 1980s, he took his son to the House of Lords and the Liberal whip using his influence for good in many directions apart from the Saboteurs. A founder member of the History Carriage Drivers, he always drove a black cab in London, knew many of the London cabbies, and was always ready to help them. He was a good friend with the great job of making money from the highest to the lowest that they be really cared about their concerns because he certainly did. All of us who have been through his naval connection will miss his great fun.

One deepest sympathy goes to Doreen, his devoted wife of 31 years and to the family. His was Daniel where the family home.

There has been a great deal of death of Surgeon Captain Bruce Martin, Surgeon Captain C J P Petersen, Surgeon Captain H G C. Mackay, Surgeon Captain William Edward Crocker, Dr R Handegren, Surgeon Surgeon Captain RPHB and Dr C. A. Burrell the newly Surgeon Commander RPHB. Our condolences go to their families and friends.

Service News



Royal Bridge Prize 1999

Joint winners of the 1999 Royal Bridge Prize: Surgeon Lieutenant Commander M Glover and Dr R J McElbridge, both of the Institute of Naval Medicine, were presented with their prize by Surgeon Rear Admiral J L Jenkins at a ceremony on his Residence in February.

Medical Director General awarded

Surgeon Rear Admiral Jenkins was appointed Commander of the Royal Victoria Order in the New Year Honours List and has been promoted to Commander in the Most Venerable Order of the Order of Australia. Congratulations to!

Achievements in the service

Many congratulations to the following members of the Royal Naval Medical Service whose noteworthy achievements have come to the attention of the Editor.

Surgeon Lieutenant Commander J W S Miller awarded an Initial Staff Course 1999 winning the Top Medical Prize. This is an especially notable achievement, thought to be a first for a Medical Officer.

Surgeon Lieutenant Commander David Gough took the honors in the 1999 Royal Victoria Order in the Royal Society of Medicine when his excellent delivery of a paper describing some of his research work on anaesthesia was judged to be the best of the medical contributions from all six leading universities of the three Services.

The Specialist Registrar in Occupational Medicine have enjoyed special mention, where Surgeon Commander ABC Adams has gained the degree of Master of Medical Science with a Mark of Distinction in the University of Birmingham and Surgeon Lieutenant Commander CRM Power took first place in the Diploma of Occupational Medicine examination in the University of Aberdeen. Both also gained the National Membership of the Faculty of Occupational Medicine examination in the January 2000.

Surgeon Lieutenant Commander L A Walker is recognized as the winner in the FRACPA 2001 examination. Surgeon Lieutenant Commander Neil Garsberg on passing MRCSch and Lieutenant S B Goodwin on his success in the National Examination Board in Occupational Safety and Health. General Certificate examinations.

Surgeon Lieutenant R Roberts was successful in the Primary Examination for the Diploma of Fellow of the Royal College of Anaesthetists held in January and February 2000.



2000-2001 RNMDS Officers

All officers will have been awarded a 15 Years' and Royal Naval Hospital warrants, along with Surgeon Staff Admiral's Emblems, pictured here during the 2000-2001 ceremony.

Retired Senior Officers (continued)

Surgeon Captain P1, Royal DRP has been elevated to Honorary Life Member of the South Medical Association and of the British Association of Otolaryngologists and Head and Neck Surgeons.

Encouraging number of RNS Specialist Registrars

Let's anyone think that just four Royal Navy medical officers are undergoing higher specialist places to train that at the last count in January there were 56 Specialist Registrars: 1 A&E, 7 Anaesthetists, 2 Cardiology, 5 General Surgery, 1 Haematology, 1 Neurology, 18 Occupational Medicine, 1 Otolaryngology, 3 Ophthalmology, 1 Psychiatry, 2 Radiology, 1 Sexual Medicine and 3 Geriatrics.

Appointment Of Clinical Consultants

As Executive Clinical Consultant Advisor in Gastroenterology Dr H J Mearns

As Clinical Consultant Advisor in Colorectal Surgery Mr R E S Phillips

As Clinical Consultant Advisor in Radiation Medicine Dr M P Spide

As Clinical Consultant Advisor in Epidemiology Dr R Ingle

ROYAL NAVAL MEDICAL AND DENTAL OFFICERS

APPOINTMENT

Consultant Advisor in Accident and Emergency Medicine to HMSOBY
Surgeon Commander M A Howell

PROMOTIONS

To Surgeon Captain
L J Jarvis, MRRC

To Surgeon Commander
C D Low, R.A.Med, R.F.Sd Gen
P C Young

To Surgeon Commander (R)
D J Hall

NEW ENTRIES

Awarded Medical Fellowship in the rank of Surgeon Sub Lieutenant
R D P Ashburn, D M McMahon,
J C Phillips, C R Pollock, M J P Newton
(D Vera Russell)

COMMISSION TRANSFERS

To Full Career Commission

Surgeon Lieutenant Commander J M Clarke

To Medical Career Commission

Surgeon Lieutenant Commander P G Coates
D J Hughes M B S Saunders and L L Walker
Surgeon Lieutenant Commander D C J Horvat
P G Moore E J Whick A Surgeon Lieutenant
Commander S & T McCabe Surgeon Lieutenant
T P Coates S A Dwyer S J Jackson
J J Matheson J M McCullough R J Moore
S Potts P S C Ross S C Russell L M Swadlow
and M J Tatham
Surgeon Lieutenant (D) E C C Mulgrew and
N A Wogan

PLACED ON THE RETIRED LIST

Surgeon Captain D L Brown
Surgeon Commanders H Ous H H M E Doyle
M A Hedges S L Matheson C J Scott and M Scott

PLACED ON THE EMERGENCY LIST

Surgeon Lieutenant Commanders (D) G A Batten
and A C M Tice

MEDICAL SERVICES

PROMOTIONS

To Captain

P Ford

To Commander

M A White MBE BEM

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

APPOINTMENTS

As Queen's Honorary Nursing Sister
Captain J C Brown ARRC

PROMOTIONS

To Captain

J C Brown ARRC

To Commander

R M Noll ARRC

NEW ENTRIES

In the rank of Lieutenant 1, commander
J J Kennedy J C Thon

In the rank of Lieutenant

L D Clancy E Mathias L M Taylor

In the rank of Sub Lieutenant

P L B Bryon J H Mathias

COMMISSION TRANSFERS

To Full Career Commission

Lieutenant Commander H L Atkins
N J Brown MBE Lieutenant V B Ferguson

PLACED ON THE RETIRED LIST

Captain P M Hambling ARRC

ROYAL NAVAL RESERVE

NEW ENTRIES

Surgeon Lieutenant Commander M J Dunn
(MBE, FRCGS and D & M (Dent) (RMC) Eng)et

TRANSFERS TO REGULAR SERVICE

Lieutenant Commander
J J Kennedy QANZN (R)
Lieutenant Commander J C Thon QANZN (R)

RETIREMENT

Surgeon Lieutenant Commander R W McCullough RD

Administration Notices

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2. All other categories — £15.00 per year

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All manuscripts should be submitted to the Editor, JRNMS, Maritime House, Institute of Naval Medicine, Alexander House, PO42 3DL. Each author must sign the covering letter in evidence of consent to publish. Our authors must be identified and numbered to support relevant comments and to approve proofs.

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Authorship credit should be based only on evidence of contribution to (i) conception and design of analysis, and interpretation of data, and (ii) the drafting the article or reviewing a critically not important contribution, and (iii) final approval of the version to be published. Contributors (a), (b), and (c) must all be true. Participants solely in the acquisition of funding, or collection of data does not justify authorship. If requested, authors shall provide the data upon which the manuscript is based for examination by the Editor.

Tables

Preferential use of tables presents the information in a pattern of cells, called cells, rows, and columns, by making the rows as homogeneous as possible. When a pattern or subject might be described better as a distribution or from the total, a horizontal table is preferred. When a distribution is described better, a vertical table is preferred. Tables of comparison or between subjects will not be considered unless the proposed use is approved by an appropriate ethics committee and followed, and the subject must explicitly that each subject will be in the informed consent. A copy of the letter of approval must be the ethics committee must be provided.

Preparation of manuscript

Manuscripts must be in English as a form suitable for publication in English and presentation. Manuscripts should be prepared with an attention to the hypothesis, objectives and findings. They should use the first 10 words. Manuscripts written for the first should be used to highlight the content of different sections. When possible, manuscripts should be prepared in WordPerfect 6.1 or Word 6.0 and submitted on 1.5 inch floppy disk. Otherwise, they should be prepared in double spacing on one side of A4 paper. The writer should submit a copy of the disk/manuscript.

Title page

The title page should contain a concise summary of the study in five key words that focus and identify all authors and their affiliations and the department(s) and institution(s) of study (university/department), where the work was conducted.

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Tables and illustrations (figures) should not be in the paper, but only appearing information presented in the text. Each table and illustration should be on its own page, separate from the text, be numbered in the document sequence in the order in which they are presented in the text, and have an explanatory caption typed on a separate sheet for the illustration.

News photographs of medical social spots or other occasions involving members of the Royal Medical Society are welcome.

Manuscripts should be prepared. The words of the title should be enough where other illustrations or figures in the manuscript or highly desirable. Photographs must be of good quality (sharp contrasted) and be provided in camera ready form with captions and legends off. The figure method makes a name and explanation should be marked on the back. Line drawings should be professionally drawn and labelled on of separate sheet and submitted as photographs, prints or high quality photocopies. Lettering and numbering should be sufficiently large to permit legibility after reduction for publication. Printed lettering is not acceptable.

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Acknowledgements

The sources of those who are not under the main subject position in the study under preparation of the paper should be acknowledged as should the source(s) of grant support, equipment, drugs, facilities, etc.

QARNNS

celebrates 100 Years of Royal patronage

Queen Alexandra's Royal Naval Nursing Service celebrates 100 years of Royal patronage in the year 2000. Proposals are in hand to celebrate this milestone and also remember all Naval Nurses who served since 1884, and in QARNNS since 1963.

One project under way is to collect funds to refurbish the Chapel of the Holy Martyrs in Portsmouth Cathedral. This exciting project will serve as a memorial to a fitting public place to all those who have served in the Naval Nursing Service.

It is believed that some Medical-Dental, Medical Services and QARNNS personnel reading this Journal may wish to contribute to the fund. If so, please forward donations to the Fund Treasurer:

Commander G H Conner ARRC
10 Anglemey Arms Road
Aldershot
Guernsey
Hampshire PO13 5HG

Cheques should be made payable to QARNNS 5000 Fund

JOURNAL of the ROYAL NAVAL MEDICAL SERVICE

Vol 88 2 2000

As for the Minutes of Defence and the Editorial Committee of the JRNMS accept it as suitable for publication under or under your forward in that Journal including references, editorial changes
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From cover: Nelson's Coat of Arms

The Journal of the Royal Naval Medical Service is published and printed for the following services:
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Editorial

One of the early visits in my new appointment to the Institute of Naval Medicine, was to pay just a short visit for a symposium on Health in the Royal Navy in the Age of Nelson. Miss Julia Dwyer, a first lieutenant who is familiar with the contents of this Review, Library of the Royal Naval Medical Service selected some books for background reading and so for the first time I read some of the works of Lord Thomas and Edward John de laing I had not read. The library I was beginning to think I knew quite a lot but the symposium brought home to me our relative ignorance. It was a privilege to listen to experts in their fields deliver these papers and answer some difficult questions in an erudite manner when they were put on the spot. Unfortunately the questions and answers were not recorded verbatim so I respectfully request Sir James Whit's commendable remark as he gives a synopsis of some of the questions of the Royal College of Physicians on natural medicine in Britain's title compared with the resistance of naval physicians and the other professionals on, contained in this review and all written in papers.

I returned again to the library a copy of *An Account of the Geyser, Sprinkled Decree of the Epidemic Fever of Seven Years* which

discusses on Dr William Fries's Review of the *Report On The Climate and Diseases of the African Nation* by Alexander Bryson, M.D. 1830. As one steps have been displaying to Miss Dwyer again I thought it would be worth a quick note in this book Bryson states, Sir William Fries, the Superintendent (General) of Quarantine for the eastern and local, Sir William Fries, he also defends the M.D. Sir William Fries from Fries's attacks.

These few examples select a number from Sir William Fries's review will be sufficient to show the spirit which pervades it, and the object for which it was written. In the whole book pressure is laid the same character is assumed of little more than a number of confused statements, mis-statements, assertions, and mis-statements, which are still further confused and declared by a missing incident written in a perverted disconnected series of letters to the consideration of a question which others treated generally and one which proved necessary should not have been presented in this.

Will worth a read for the language if not for the apologetics but would wish to state by a no way others get published today.

Paul, Biddick.

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for experimental trials as conducted by London HMS BALLYMORY in 1947

- Training.** Medical Assistance and Medical Officers destined for submarines are trained on all aspects of suboceanic analysis, environmental monitoring and hygiene and radiation protection. Operational medical training is given for deployed RN Medical Branch personnel and later entry training for Medical Officers. Medical aquatic training is given to non-medical personnel with special medical responsibilities. Shore radiation protection courses have provided for roles as radiation protection supervisors.

- Health & Hygiene.** This division provides the focal point for occupational hygiene, toxicological analysis and public health work testing. A programme in the future would 'develop rapidly available or forthcoming procedures that are in the work of a ship and to meet part or develop or commercialise as unassailable measures to produce continuous and verifiable assurance. It will use and modify data as critical examples being a self-sufficient always movement plant as a brand new ship which was having a complete breakdown up to the bridge and other areas being completely new vessels.

Toxicology - my first research on toxicology at HMS Ballymory shows the medicines and quick medicines presented a major toxicological hazard to sailors. Heavy metals used in batteries and propellants e.g. lead and thallium are some of the modern hazards.

Greenwich Hospital Division in Northumberland produced lead lead poisoning in the bones of an adjacent farm. Within this was the modern day for medical control measures of poisoning in reducing the lead and the hospital produced the farm.

Water testing. The introduction of new water tanks - policy of all in all dimensions holding millions of water solved many of the problems with possible water in barrels but they still have not all gone away - water sampling will provide some bacterial contamination susceptible water in recent times but included areas of mild steel pipes rusting and giving high iron levels in the water and lamp water from the breaking of paint solvent glass two pack epoxy paints. Water based paints contain phenols and alcohols produce chlorophenols with a cancer, dermatitis rate.

Audiology and Vibration is another function of the division amongst other things they look at the noise produced by naval gunfire and other weapons. The portable hearing test is common on the Wharfedale and does not have thinking about.

- The Environmental Medicine Unit (EMU) has computer links with universities for research projects but we also have under graduate and postgraduate students and there a professor with Portsmouth University.

Applied Physiology - this department aims to measure the effectiveness of Royal Naval and Royal Marine personnel through the provision of quality research, consultancy advice and

Greenwich Hospital Establishment - Table of Data

Days	Board Cases 1 of 10-14	Board Cases	Board No.	Admission No.	Discharge No.	Deaths No.	Deaths Total
Sunday	1	2	—	1	—	4	—
Monday	1	2	1	—	—	2	—
Tuesday	1	2	—	1	—	1	—
Wednesday	1	2	—	—	—	4	2
Thursday	1	2	1	—	—	4	—
Friday	1	2	—	—	—	7	2
Saturday	1	2	1	—	—	5	—
Total per week	7	10	2	2	0	24	4

- The Hospital table show some board and how they are lost for which patients' conditions Audiology have been reviewed.
- The Personnel due at 11 is check when the Environment in this intends to see that good order be preserved during their meals.
- N.B. The surplus of peace wage being a considerable quantity is given credit to the personnel for loss in the price of the hospital.

Greenwich Hospital Infirmary — Table of Diet

Days	Break Bk	First Quens	Tea Bk	Supper Bk	Break Bk	First Quens	Tea Bk	Supper Bk	Break Bk	First Bk
Sunday	1	1	1	—	—	—	—	—	—	—
Monday	1	1	—	—	—	1	1	1	1	—
Tuesday	1	1	—	1	—	—	—	—	—	—
Wednesday	1	1	—	—	—	1	1	1	1	—
Thursday	1	1	—	—	1	—	—	—	—	—
Friday	1	1	—	—	—	1	1	1	1	1
Saturday	1	1	—	1	—	—	—	—	—	—
Total per week	7	7	1	1	1	2	2	4	4	1

1 lb. Water - given for breakfast and milk - potatoes for supper on most days - porridge for breakfast and rice - milk for supper on certain days. Wine, brandy, &c. are supplied according to the demands of the Physician and Surgeon.

clinical support. The same areas of expertise include physical activity, nutrition, heat stress, thermal protection, survival in the cold, respiratory physiology and subsequent related atmospheric life support systems as the subject of their interests upon the physiology of the underwater and their subsequent performance. I had a look at some data from Nicholson's notes (the Greenwich Hospital Establishment Table of Diet).

The supplies of gross weight was still being collected whilst I was in hospital and this the only note on the menu for lunch on Wednesdays.

The daily allowance for the station of the Infirmary at Greenwich was never varied (see Greenwich Hospital Infirmary Table of Diet).

One of my staff went to the supermarket and found the menu for seven days was out of stock. The surgeons got less beer and ate less, much cheaper in hospital.

The French and Spanish portions of war had less pork but more butter and peas.

Heat injury study has looked at the nutritional requirements of Royal Marine Forces during Commando training and found they were spending more than 4.50 a week on chocolate to

supplement their rations because the rations were only provided with half the money needed. As data that was added to that data (more) but they still ate the chocolate despite expense and excellent quality of all articles is available. The physiologists have also studied nutrition and physical fitness and metabolism, even though in September that there were with no maximum limitation of space, was considered that drink during prehospital action.

In March, a medical with underwater swimming's clothing suitable for the climate, the medical physiologists continue work on clothing for the task including using a flame resistant during strong EM Action (up to a temperature of over 1000°C where after have wounds there or less than five persons of the body area with second degree burns. The same clothing has used for the lighting and pre-washed gear, less than 25% suitable with lower after 12 months.

Environmental and Occupational Psychology - the consideration of environmental factors, as well as improving the quality of water on board, the reduction in mental factors involved in handling, water tasks led to suitable assessment in the supply of water. The Human Factors research team at operational improvements in tasks. Also and where plus laboratory and occupational psychology - the lack of a good, good water, even when and reduction more of a problem. Reduction of equipment usually leads to 50.

Naval and Thermal Medicine - In Nicholson's time drinking was not sufficient - unless you found water flowing, water to play in. When suggested really suffered sleep's state or water

Cooking of the Menu in June 1980

Greenwich Hospital Infirmary	171.20
Greenwich Hospital Infirmary, Royal Inf.	171.20
Portion of New Company of Sea	
Lunch	141.50
Tea and Supper	141.50

made into multiple bags, as used in India centuries previously. The Royal Navy had no war-time stores, all parts before warships were used, this is reflected by some in the possibility of diversion for emergency aid. The current and future medicine divisions have some very good facilities for life processes and other related equipment tests. Research was carried on cold water hypothermia and cold injuries.

Undersea Medicine - the Submarine Medicine & Maritime Medicine department provides operational support to the submarine fleet in areas of submarine escape and rescue, submarine environmental control (including materials toxicity management) and submarine medicine. They are the focal point in the Ministry of Defence for submarine medicine and deploy personnel in support of nuclear accident response after submarine escape exercises and in the event of submarine disaster. They have a large training commitment in these areas.

The Diving and Hyperbaric Medicine department provides medical support on diving incidents. It has advice and treatment for serious diving accidents, advice during development of new diving equipment and participation in trials. The Hyperbaric Medicine Unit at the nearby Royal Hospital Haslemere is a collaborative effort between DASA, DNM and Haslemere. As well as treating diving accidents in the hospital by day

careless or serving it also provides hyperbaric treatment for a wide selection area of hospital patients for such ailments as carbon monoxide poisoning. The unit is located after the lunch With the next speaker.

After the speech comes through video of the work of the Institute and showing some parallels to the Medicine and some interesting current and future many of the problems will remain on diversely use professionals more interesting present.

Photography

J. Lamb, *A Director of the Navy in Two Parts*

WINDYBUSH, London, Surrey & Chichester

J. Lamb, *An Essay on the History of the Navy of the British Empire*

WINDYBUSH, London, Surrey & Chichester

J. Lamb, *The Navy of the British Empire*

WINDYBUSH, London, Surrey & Chichester

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Health in The Royal Navy During the Age of Nelson

Nelsonian Medicine in Context

Sir James Watt

On the 17th September 1805, before leaving his home in Menzies to join Victory at Portsmouth, Nelson took the trouble to write to Lord Barham on behalf of John Keppel, widow of his former Physician at the Mediterranean Fleet. My Lord he writes: 'The friend and widow of Dr John Keppel has Physician the Med Fleet are desirous that I should testify to your Lordship the character which I have given pleasure in doing for a better man in the Mediterranean I never met with and I much less than Mr Drush was principally owing to his going to Menzies for the purpose of leaving Larnach Place for the fleet at Menzies which is likely to be obtained in 100 per cent increase of 4 or 5 Shillings'.

The Influence of Nelson

The letter describes not only Nelson's humanity and concern for individuals, but the priority he attached to health which the physician depended upon receiving support of the right calibre. In a letter the previous year to Dr Andrew Ross, Inspector of Hospitals, he had recommended his surgeon Mr Telegraph whom, he said, 'I esteem for his great abilities every day I love. He aided however that we must lose such men from our services of the army just as an encouraging medical man while we do nothing for him obtained. Health cannot be easily bought at any price of the fleet is never easily maintained and supply in the Nelson as a flourish owed much to Nelson's own experience of illness and injury, his relationships with his doctors, his perception of their worth and his evaluation and adoption of their recommendations. For instance, his former & lasting friendship with Dr Benjamin Mowbray an army physician he met at Kingston Jamaica in 1778 and corresponded with him regularly, yet it was the naval health concerns proposed by naval physicians, notably Lord Howe, Truett

Robertson and Colledge which Nelson adopted rather than the professional and professional enquiries advocated by Mowbray. In fact it could be argued that Nelson's ambivalence towards health is one of some of the reasons. Against medical and preventive medicine recommended by these naval medical authorities was a disposition to his critics at the time instead of evidence.

Middleton and Ross

Lord Barham, to whom Nelson addressed his letter about Mr Ross, was equally well informed on health matters. Because of his lifelong friendship with James Ross, the surgeon at HMS Anson who, as Sir Charles Middleton, he was serving on the West India station, Rossy after having his letters was provided from the Navy, because an Ansonian physician and acted as Middleton's physician and private secretary when Middleton was Commander At a Board of Sir Gilbert Elliot and study surgeons of the fleet, he had assumed that the cases of Lord and Elliot were understood and informed. Together Middleton and Rossy had organised the First Fleet to Australia in 1788 a well planned operation on a scale never previously attempted. Rossy chose the surgeons who applied the military principles with such success that they achieved a remarkable health record despite the unsatisfactory travel means. Of the 1404 who sailed from England only 75 died and only one of these was a female. It was a marked contrast to the health record of the Second Fleet which sailed after Middleton and Rossy had been superseded. One of 1406 convicts, 267 died on passage from England and multiple medical deficiencies and a further 446 wrecked and/or died were admitted to hospital on arrival at Sydney many of whom subsequently died. As a result naval surgeons were provided for the Fourth Fleet and mortality plummeted.

Sir James Watt BSc, FRCS, Former Medical Director General (Retired).

Admiralty Health Policies

It was, however, characteristics of the situation prevailing in the Royal Navy before the impact of the medical profession during the Nelson era that in the *Galley Blues*, pointed out the constraints from the maritime battle of the Americas and Napoleonic wars did not compare with those from centuries mainly sunny life-story physicians and sailors. Over Professor Lewis has James that doctors' actions accounted for only 0.3% of deaths, founding which his and *Lynette's* a further 12.3% while doctors and sailors on board were responsible for an astounding 87.5%. If the mortality, and *Blues* during the long history of the navy, mortality was too high to what it was in 1779, the whole work of medicine would have been redundant? The state of affairs would undoubtedly have remained had it not been for measures taken by naval surgeons themselves for the College of Physicians, considered negatively by the Admiralty, was stopped at several instances and prevented subsequently on grounds of which in medicine had little or no personal experience (in surgery) a recommended chair of naval, which dominated surgery, and alcohol usage and opium because, as Dr Richard Brind in personal explanation explained it was an essential substance for and from, an other words, the weapons and losses, which were used, surgeons had been advocating for 150 years. For lives in which used doctors as the aid of the government, which in William Childers and John Helyar, had passed the value of medicine had, which pointed against the College against blood letting and purging, with opinion of practitioners of the practice and in collective down. The Admiralty, however, had professed to be, both at the point of a situation, which John Wood, which contrasted surgery and medicine, it was a medical practice and purging, which often possessed the doctors of the century.

The results of such policies had been tragically demonstrated in James's correspondence from 1740 to 1744. Of the eight ships and since 1800 men who left England only one ship, *Aminta's* *Continence*, with about 110 men returned the remainder having died from various, significant, multiple, various diseases, fevers and dysentery? During this voyage John Adams, a naval surgeon of great experience, published an enlarged edition of his book *The Navy Surgeon's*. Adams was typical of the new breed of surgeons serving the Navy

men with an admirable Second Lieutenants. They were progressive observers, courageous enough to challenge conventional wisdom, thoughtful and observant, in their clinical practice Adams was clearly that the key to solutions lay in continuing study of education and proposed using a copy of the *Book of Medical Jurisprudence* in Portsmouth for the study of anatomy, surgery and physics. To these, he suggested, if we add a well-furnished and a book, *Parley* or two to visitation, work books and much a Philosophical Paper after Science would be enough.

James Lind and Surgery

Medicine, as any one concerned with it is today, a science was ignored in the presence of one but Adams proposed was taken up by a group of surgeons concerned about the appalling mortality during James's correspondence and frustrated by their apparent helplessness, when faced with the sea diseases. They formed the Association of the Navy Surgeons of the Royal Navy of Great Britain which first met in January 1747 and appointed first James a leading surgeon at City's Hospital, then the famous William Hunter as their tutor. It appears to have been the first, perhaps the second, only in Britain and numbered James, Lind among its members. In a paper to the Society he presented a critical review of the medical reports of James's correspondence, a study of the world became on surgery, the exposure of contemporary and a legal conclusion. He was points and the necessity for doctors, with the need a strong anxiety for good vegetables, and the first fruits of the earth, when taken from an unwell feeling nation, from this strongly showed constant experience continue to be the most common prevention and the first cure of these diseases. His first went on to conduct his controlled clinical trial on *PMH* sailors, the first was scurvy, which proved the orange and lemon could cure, surgery and prevent it, that what does not prevent it, denied the time for his *Treatise of the Scurvy*, published in 1753, which he made the mistake of dedicating to Lord Adams, then a returning First Lord of the Admiralty who purging and complications, prevented Lind to be Senior Physician at the Royal Hospital Haslemere in 1778 with the death of his career in London. That is, probably more than any other surgeons, why a book, the Admiralty 42 years after Lind's successful evidence, to provide a general mass of human

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and treatment. They recognized that patients could be brought and treated readily with confidence here, or it would fail to follow the normal international pattern: most treatment 'and end in death with haemorrhages covered in moral complications. In fact, the first clear description of cerebral modern surgery (John Bell in 1787).

At this time the Admiralty having finally abandoned Wolfe's deadly pill, had adopted for the treatment of fever a powerful diaphoretic devised by a Dr Robert James, an equally important practitioner (and a member of the College of Physicians and link to support his moral collapse). The powder in time known to have been a mixture of potassium and lime plastered in Latham's own Oliver Goldsmith and founder's novel presents. Lord Blakeney and Robertson were all opposed to the blood letting and purging proposed by their common civilian counterparts, which Robertson considered illegal and relied on the navy and intelligence as of common law, without waiting for a committee. Confusion had arisen. Robertson's powder had not always worked, since it was frequently adulterated by civilians with bark of the Flavian Island, one had died, however was gone and then, as with Robertson's, continued. Lord advised surgeons to be taken when ships lay off three sudden deaths. Another of all over months was to be treated, various treated against all diets, tissues, and then from Goldsmith, while Robertson was first to persuade practitioners against the sweating and sweating pattern which was continued after three cases to the ship. Yellow fever however as they all recognized was resistant to all known forms of treatment and could only be eradicated by the immediate means of the altered ship to a cold environment (usually British, North Sea).

The legacy of the Robertsons

The climate of respect, clinical observation, shared thinking and rational analysis generated by the rapport between surgeons and physicians of the various fleets had themselves in Nelson's day to new standards of health and hygiene which enlightened commanders such as those Robert and Nelson sought to encourage. Indeed they recognized as the Gilbert Blane pointed out that the progress of surgery about had doubled performance by making ships to remain at sea for four months instead of the customary two.¹ In Nelson's remarkable description also linked Nelson's character

and close relationship with his doctors was nevertheless quick to adopt their proposals with the result that in 1803 he was able to maintain a fleet (Mackay of Brest for 121 days with 23,000 men on 24 ships and land only 10 men ashore on their return) in a harbor to them, his surgeon Andrew Boyd explained how a had been advised about dry ships, at complete upon ventilation the wing of feeding dry rotting of decks, increased upon portland cementation from once to twice off every and the purchase of a sick berth for each day² - all measures consistently advocated by the medical reformers.

Surgery

And what of naval surgery during this period? The postoperative of most people have been coloured by the chronic haemorrhaging, and uncontrolled infection of surgical cases, underlined by warships, showing heavily upon Andrew Ross's novel in which Tobias Smollett, who had been a surgeon's mate during Nelson's disastrous expedition to Copenhagen in 1781 had commented his experiences.³ Nevertheless some patients of the period might lead us to believe Smollett's description was too much. For instance Gilbert Young surgeon of HMS Archer at the Battle of Copenhagen in 1807 had no more to record than and, during the action many wounded brought down to the deck, were being subsequently by their fellows over the main deck and surrounding spaces running over the surgical instruments and dressings. Young had carefully laid out Amputees and made the patients over from wounded and dying his leg in single bundles to prevent order which experienced surgeons had shown to be an essential principle in the art of surgery. I was able to preserve myself from and collected the wound and transferring to my mind the safety of the treatment in direct my presence where the greatest and most essential success could be performed yet in pain was my thought that I began several operations under a cloud of smoking before I should have received the blood vessels. There were 41 killed and 107 wounded out of a ship's company of 485, a casualty rate of over 30%. One of his men had received a penetrating wound of the chest from a musket ball, but this had a happy outcome for a month later following a medical fit of coughing he brought up part of a ribcage and found himself wounded that which Young had actually observed to be daily continued better.⁴

The next serious test took to naval surgery

From his own "trial" he provided a reason for the three arteries. "The arterial system served as an oblique, anastomosing series, the main dividing blood vessels and nerves and separate anastomosing series. Although from a vascular point of view, the arteries and veins were continued to the hand and foot, they might traverse the hand and close the limb from the torso. Thus, veins continued to run through the chest and exposed anastomosing drainage. A rupture in the lumen of a joint often passed through the artery with hemorrhage difficult to control and through drainage immediately. Melanosis was not, with therefore well located and these anastomoses were demonstrated when cutaneous by each artery of the chest. In October 1857 a naval surgeon, John Holmes, accepted credit by cutting his thumb on board HMS *Temeraire* and the surgeon, David Fleming, noted that the outer coat of the common carotid artery had been damaged. Later, after a violent episode of coughing, the artery ruptured and bled, and the patient with blood flowing abundantly out down on the artery and had a fall which he was put on a pillow to stop it any further loss of blood. It was the first recorded case of a successful ligation of the common carotid artery." Holmes' method, surgery of the aorta in March 1761 was also cited as an important source. He found the inferior anastomosis, with blood coming through his fingers, on pulse at the wrist and pumping out blood and air from a stroke, almost completely divided and with a one-inch gap between its ends. He quickly restored the anastomosis and held the arteries in place by stitching surrounding tissues to give it support. The wound healed without infection and his notes and findings remained to record."

Innovation

Other surgeons also made medical history. In 1814 James Keane of Plymouth divided a posterior flap upwards for exposure of the lower limb which involved ligation and removal of the artery, and exposure of the strong arteries after the usual vascular exposure.¹⁰ Joseph Hunt, an assistant surgeon at Birkby in 1799, was first to use ligatures there and used a potential source of infection caused by the nature of leaving ligatures long, enough to extend outside the wound and produce drainage.¹¹ But the most dramatic achievement of all was a fortuitous inspiration which occurred in removing the common carotid and exposed a man with a

serious gunshot injury of his shoulder. It was carried out successfully by Ralph Green, at the naval hospital in Glasgow in 1808, though it has never previously been described and demands an immense knowledge of the complicated anatomy of the region. Three months after the ligation from Glasgow and his small son succumbed to yellow fever the year paid by numerous naval surgeons for the devotion to duty.¹²

The Naval Medical Heritage

Throughout naval medical history it is possible to discern common themes. I propose for clinicians a rich and anastomosing naval medical history, past and present, surgery preventive medicine, medical education and a spirit of surgery which infused contemporary knowledge to personal experience and led to notable advances. Interdisciplinary practices in terms of "surrounding" and "keeping" common diagnosis and medical outcomes appear to have evolved from the centuries exemplified by the Knights of St John of Jerusalem in their galleys. These surgeons followed the three simple principles, techniques taught in the medical school of Salerno in the late Middle Ages by surgeons who had developed them through the Crusades. These three underlying principles were evident in the original teaching of Thomas Wither, who taught the first generation of naval surgeons during the Tudor period¹³ and in the works of William Clowes, Surgeon General of the fleet during the American War.¹⁴ They were disseminated by writers of the seventeenth century with naval experience in a time when the teaching of Galien, who rejected wounds, to suppuration was achieving new dominance and cleanliness and hygiene were emphasized. As the dawn of the eighteenth century John Adams kept the tradition alive. Adams brought land to the sea and Huxley, in 1739, demonstrated the practical consequences of land's efforts in his renowned victory in Quebec. They with a fleet of 14,000 men in perfect health after eight months constantly at sea.

That was the context in which Melanosis happened evolved under the aspects of such enlightened commanders as Rodney, Boscawen, Howe, & Vernon and Nelson himself and it is time to say that this critical period of naval history was influenced so much by improvements in the health of sailors as by their surrounding explorers. As the Galien House demonstrated the impact of health reforms on mortality and

unarmed men (such as the coffin bearers) or women or other people in places will leave the work when dropping out, rare any comments (hesitation or complaint) and then any spreading also.

According to Nancy Wilson believed again strongly that she was the cause of scurvy and finally wrote: 'Early in fall when he first came to us he left off the use of salt and soon took it with his food'. Since a few salt diet is known to be associated with good health, low blood pressure and longevity etc, more explain Nancy's findings when he did Nelson's post mortem.

It is interesting to read in Nelson's letters to work on keeping Flann notes his continued health. I only have time to quote from our woman to William Maxwell at the Admiralty from 'Friday at sea 7th August 1805' Nelson writes that the first physician to the Fleet – Dr Napier – had conferred with John Blandford, Marshall at Messina, for supply 10 thousand gallons of lemon juice. Typically Nelson pursued Dr Napier for obtaining this rate quantity by his own hand of the writing: 'When it is considered that lemon juice at England (if so it may be called) costs 1 penny a gallon and in the context unseasoned only a shilling for the next price a will I am very sensible Dr Napier is that Lordships's appreciation for his careful and perseverance.

Scurvy

Whatever non-rational illness Nelson had in 1793 (I do not think it was yellow fever) the illness started by a fever and accompanied by another two weeks for the following symptoms which were very well known to the Naval Doctors of Nelson's day: intense fever coming on suddenly and the symptoms gradually becoming worse, redness/painful yellow skin, black vomit, collapse, and death. The vomit was, common, opaque and thick.

Nothing like that was described by those associated with the *Amphibious* of the San Juan Expedition. Moreover when Collingwood wrote on 17 the *Amphibious* the illness of the sailors on board was said to show symptoms of 'Fever, fluxus and colic' also.

'No other did he suffer from'. All doctors used to be brought over to make a second diagnosis of one will do less it is very likely that Nelson very probably suffered from this also during the time when it got worse. It again very nearly died. One illness was malaria. The claim to be considered with regard to the other 3 are then:

Finally the *Amphibious* took seven weeks to travel from London to the mouth of the San Juan River during which time everyone was eating ships food. Obviously British sailors were extremely conservative about their food and by the time the ship arrived it is highly likely they were all on a poor dietary state leading to vitamin C deficiency – this is another essential substance found in liver, kidneys, vegetables, fruit and real yeast – none of which substances would have been readily eaten by Nelson or his men, and this real is usually destroyed by cooking. It is a substance absorbed in the small intestine. Lack of a protein, iron and rarely phosphorus, copper and purpura, eczematous lesions by vitamin A, and other symptoms in the hands. The human body does not have large reserves of this acid.

First medical reports of a condition subsequently called Tropical Scurvy were made by a French doctor at the West Indies in 1799.¹² Many further reports followed and one case occurred it was described as 'cystic' described. The main symptom which causes it is not known, but from the point of view of the human the illness is something because it usually has an incubation period covered by this Nelson gave in the *Amphibious*. 20-30 days, which is much longer than that of almost all acute tropical gastric intestinal infections. Scurvy is usually a chronic illness, but it can have an acute onset and it can cause fever and delirium. What is more, in people with an already low salt and food (e.g. due to scurvy) Scurvy is rapidly progressive. Acute scurvy symptoms are diarrhoea, fever, anorexia and weakness.

Of course at this distance in time I cannot be one hundred percent certain for all the time, but in this opinion/doctor I think Nelson was in a progressive and therefore, low protein diet, which he considered to be a main attack of tropical scurvy with its associated problems included as of from the Fleet. Nelson was so weak when he arrived back in England he had to be carried ashore, at the end of the day, Dr McArthur say this was due to being 'so completely debilitated by the journey and time out to longer'. Severe prolonged dysentery also characterised of constant body fluid components such as sodium, potassium, and iron and in combination. Reduced due to poor absorption of iron also causes fatigue. No wonder Nelson was not taking this life was immediately saved by not going to Green Bay Hospital and by the last but immediate

tion of cervical spondylosis, it is a risk for shoulder surgery. However, this is only one of the various disorders in the lower neck, which affect the neck and which in turn, sometimes, possibly, if neurologically left alone with a small lesion, can result, at times, the symptoms of which regularly be reported. Confidently on 24 January 1781 to Captain Lockhart "I have been so ill since I have been here, that I was obliged to be carried in and from bed with the most excruciating pains... but thank God I am now upon the mending hand. I (now) performed three runs - a day drink the water, sleep some - and better every other night. And on 26th January in London. Although I have not quite recovered the use of my limbs, yet my mind is as a new man, and I have no doubts but in two or three weeks, I shall be perfectly well." February 15th to Lockhart "My limbs thank God, in very near perfect recovery, and I have the pleasure of all my limbs except my left arm, which I can hardly tell what is the matter with it. From the shoulder to my fingers, such as, as if it all do it by the fingers and thumbs, give my fingers a stiff all, yet all I must necessarily with to be employed, and hope it will not be long."

February 22nd to Lockhart "As to my pain, it will not be the least bit what I am sure that is certain, but you may tell Mr. Keppel to add leave to it, and it will be much needed."

Notion must have been that a moderately heavy cold, captured on February 16th had to change in a matter of a further couple of days with upon a joint description by Nelson of his symptoms, as a sign to his brother William "I have recently lost the use of my left arm and very few of my left leg, and thigh and am in great doubt the use of a Mr. Adams. He gives me hopes when words will remove my disorder."

I believe, nevertheless, of disorders which he does not mention but which are, perhaps, well known and possibly reduced into, and absorption and topped Nelson took this peripheral neuropathy. It was not until August 1781 that he was able to leave his post at the Admiralty. Even then he was not fully recovered until his return to London in late October that he had been "so ill as hardly to be kept out of bed for the next 24."

What events were told and clear when Collingwood took over the *Northumberland* from Nelson was, hardly less puzzling the reasons he could call upon to try and help the widely over-boarding the whole shipboard with candles and lighting fires at seven o'clock and keeping them burning continuously. "I scarcely have anything

the lookmaster's choice. When [HMS] *Northumberland* got back in Port Royal in September 1780 kept accounts of months in food and goods in formal were got out of the hold, surveyed, consumed and stored, consumed. Clearly, and how if a 2800-ton medical personnel will do so long to obtain the exact state of respect upon the general consensus is that it is something present in the state of specific geographical area in which *Northumberland* is not, how farthest down and patients must have had to be 700 years up when for example in the month of May in this 18 named September, and on no one day 77 patients had been on another Collingwood stopped all off to sleep on some up land, or another 90 were sick and on a fourth day the month it was reported, 86 women were exceedingly ill."

One last confirmation of this I must give to you, deprivation of food and in the human body causes peripheral neuropathy, anaemia, and in about 20% of cases, abnormal things, perhaps Nelson did not expect, perhaps, perhaps in the Ministry of Agriculture. In his absence from the first Jean Baptiste looked after some of the numerous later. He commented on "patients, improved. And there, in some chambers, as some who had been long ill on the Spanish Main. That last important point, another Collingwood not Monday went down with the disease. It was not sufficient. I believe the members of the San Juan Expedition about constitutional water when they go there and the way their meeting."

The sequence of events for Nelson was I believe, Poor food, which weak, perhaps primarily since his body better and food, drinks, constitutional water. 28-30 days, various signs, disorders from poor discipline, weak loss of food and peripheral neuropathy, most likely, body part abnormal sensation.

Paralysis

A book published in 1797, written in English by one Christopher Rapin was called, *A Treatise on the Effects of Rapin* in the text, entitled the names of a series, of his own invention by giving examples, when, as we had general officers - that such was that of Captain Nelson who was now ill in Rapin's book. My reply.

Case 81, James gave called Captain Nelson of the Royal Navy, whom I successfully met with a Portsmouth, cleared me a better connection, which, wherever, he showed great last connection point. He applied to one of the

support to the hospital, who assured him the case was critical. And that persuaded him to go through a terminal course. I got an opinion of the complaint and the support upon a consultation, having no objection to not being consulted. It is covered in with a history, and the case is completed in a few days without any other application than the measure. I saw the gentleman two years afterwards, when the perfect state of health confirmed my prognosis and removed the hospital support of his medicine. It has been noticed that the case likely came for Henson and Nelson in New York just was February 1792. There was only one Captain Nelson in the Royal Navy at that time. Several points must be noted. Nelson's career from when Henson writes to have been proposed to believe he had remained abroad and Henson removed the Henson physicians from inside his mouth with the history - a form of surgery. What it meant a mechanical course was the specific treatment for regurgitation at those days when Nelson must have known and he accepted this as well. Clearly the cause was not cancer, but Nelson's subsequent condition suggests that have left lingering doubt, as he must, especially as Henson had been so rapidly beside with his first husband. Getting Lady Henson pregnant must subsequently have been not only a great joy but something of a relief to a man of 41 with a just history of exposure to venereal infection.

Nelson's heart & lungs

There are some mentions in Nelson's letters about episodes of illness which he does not describe very well. In a letter to Locker written at the end of September 1796 he says to her, "There must have to vary all will have" that I have only a faint recollection of anything which I did. My complaint was in my throat and he goes on "The Doctor thought I was in a consumption." How amazingly he had reason to say this. Nelson in early July the same year. "I wish I could tell you I was well but I can't do that. My activity of mind is too much for my poor constitution. I am more in a shattered and of course it was all over this time that Nelson was being so concerned with the problem of the Portuguese Act in the West Indies." The letters during this time are completely banal. My belief, backed up by comments in his letters is that Nelson was one of those people who rather make stress, emphasizing. We know for example that he failed to eat properly in the 4 days before

the Battle of Copenhagen. And in a letter to Dr. Ross in April 1805, Captain Cook said of Nelson "He will tell you all present anxiety I am under you death or sleep." Later he was to write that he had that so much weight was placed for could actually keep his eyes on his legs."

All this leads me to Nelson's heart and lung problems. In Nelson's day a patient having weight and complaining of chest pain or heart pain would have understandably been suspected by his doctor to having consumption. Remember there were no CXRs, no scans, no ECGs or echocardiograms.

If I work backwards I know from Henry's post-mortem that Nelson's heart and lungs were not only normal but very very normal, so perhaps leading they resembled those of a youth rather than a man of 41. I also know Henson proposed Nelson's chest symptoms were caused by a condition called *Glaucos Hystericus*. The two sources of the condition in medical literature was in 1787¹² and it is basically that in typical consumption and opens in the oesophagus. The X-ray of a person suffering from *Glaucos* looks very close to early advanced consumption and again, increasingly patients with lower oesophageal problems can get heart type pain because the same nerve supply, both vagus, whether who people whether had a heart attack frequently that they have got indigestion and people with indigestion often think they have been suffering heart events. Mr. Lockhart's health was evidently good with the exception of some slight attacks of indigestion which were recurrent three or four days and confined him to any degree with regard to exercise or enjoyment. Henry says Nelson had chest attacks at 12 months and was shocked by them. Henry says that the pain was due to indigestion brought on by waiting for hours at a time and we know Nelson did that and the pain was improved by exercise. This was in all aspects a heart pain which is mentioned by other and cured by eating. Henry wrote "These complaints were the consequence of indigestion brought on by waiting for several hours together. Mrs. Lockhart had one of these attacks three or four times a day before the battle but on removing his indigestion returned he got rid of it. This attack seemed to be attributed to indigestion and content upon him it was mostly an unpleasant symptom rather hysterical attending indigestion."

And all this is nothing like De Crespigny's

[and] were filled with simple joy, as I never had experienced before, and finally all of which happened to Nelson during his life and all of which he reacted to with bursts of depression and anxiety. Perhaps the most famous depressive episode in Nelson's life was the first, the so-called Cold Creek experience. After 18, separated from his friends, sent home to work all month fully prepared to be the Nelson remembered the episode almost three decades later as "one of the most" of his life. The first three and a half are profoundly depressing to read, as they are to read. History, definitions, and answers. Not the so-called "Nelson's" but the "Nelson's" of the

But there are ways to happen with other kinds of depression in the future, and there are things for example of her situation in the death of her several daughter or in the pre-Capitulation delay of her Male Prince. Perhaps that the emotional delay to look start himself out of trouble represent by the use of totally positive thoughts and actions. The smiling face of politicians, the extraordinary physical activity before Capitulation before or during time to reflect and be thankful to God for opening Lady Hamilton and not dead Horatio. "Daily that the worst concern as the time which needed an earthly mother and love for another one, a wife which in that time known would clearly live marriage and bring a son of troubles down upon his head." And Nelson constantly states in letters support lives of depression - clearly down the last two years, in his letter to Lady Partington six months later "When I go home and on no more time I shall live, very very live in sight and my spirit have received such a shock that I think I cannot recover." But also in the top secret letters when symptoms appeared he has a pale and weak - he turned for there the first emotional disturbance of a state or a noticeable collection of "fancy" and "warmed

In 1980 the then Director of Post Graduate Medical Education at Oxford, Sir an article on the British Medical Journal said: "The extraordinary ignorance of the medical consequences of human poisons is a point which increases danger and adds such ignorance can be extremely concerning particularly to lay persons that are the victims themselves, or to the knowledge of lawyers."¹³ Obviously as my opinion, they are the tale of today's companion in "The Slave's South in the Age of Modern." Hope you will now spend your time with "Science of Health" and not with "Medical

one to be... "I never thought" me by hand in a large number of his oral compositions. He only knew as much about his words then as he did on his last "Chapman" week. "Such a tremendous task before" and with a brilliant skimmer of his many squanders that people kept his letters and the poems, notes, where you still can read.

Subjects differed from the following diseases:
All had schizophrenia and various variants, have
been hospitalized at least 10 times before.

[illegible]

At times, for that preparing the account, is well-aimed like strong love is a point on a Consideration Moon. I trust you too never had the same method of testimony with it. Because of very great stress and very serious ill health.

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- [illegible]

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11. *Journal of the American Medical Association*, 2000; 283: 2689-2696.

English
Courtyard

Health in The Royal Navy During the Age of Nelson

The Development of the Sick Berth 1740-1815 and its relation to HMS Victory

Peter Goodwin

In the first half of the 18th century there were more difficulties in caring for the sick and wounded in HMS *Ships of War* than there were a variety of reasons for this lack of sound medical knowledge, particularly in naval hospitals located close to accommodate the sick. Before the construction of forward medical establishments such as the Captain's Room, James Lind and Thomas Tenison medical establishments ships were generally considered, the sick being treated as in war hospitals supported from the rear of the ship, berthed in the lower gun deck. Considering that the sick may have been suffering from malaria, dysentery and scurvy and various contagious tropical diseases and yellow fever, then the possibility of disease spreading that goes down throughout the entire ship's company was very high.

William Scudler, in his work *Medical Reminiscences during the War of America* (1778-1783) and the *War of the Atlantic* (1783-1791) (1794), provides a superb example of the conditions he met on a ship at sea when caring for sick seamen.

But when I followed him [the surgeon] with the patients into the sick berth or hospital and observed the situation of the patients, I was much less surprised that people should die on board than that any seamen should recover. Most I saw [William] discovered symptoms, suspected in some as doubtful one upon another, that not more than 14 inches space was allotted for each sick bed and bedding, and deprived of the light of day, as well as food air, breathing nothing but a constant atmosphere of the musty stench arising from their own excrement and decaying bodies, dyed with vomit

Ascribed in the 18th that turned all of this, and directed its efforts to maintain its health for people as that helps to maintain.

In short, the lower deck of the *Ship of War* which could berth up to 400 men, was generally regarded as a dump and was taken care of as a ship. In Frederick Blandin Scudler also described the difficulties of obtaining medicines when hospitals were along so close together. The water, that is, water to get to the sick men berthed on the ship's side to get to the crew on the deck, and there the food and medicines lay between the gunworks, and consequently due to the weight of bodies passing it was poisoned from both sides. The water raised by himself is that the crew designated as a sick berth on the lower deck, berthed being changed was

disposed of the side of the ship on deck as a permanent feature, which did not and could not. Regarding the general treatment of seamen that went into hospital on the sick bed, Scudler wrote that: 'As a common form of the morning the best of the men were moved off the deck, saying a small boat' and so always compared for the seamen treated all those who had been to appear before the main mast, where one of the doctor's mates attended with applications to their throats.'

The few documented attempts to provide proper facilities for treating the sick relate to Captain John Warham of the 74 gun ship *Cornwall* in 1768. At the time the *Cornwall* staff was serving as part of the Gibraltar force then commanded by Admiral Sir John Jervis. Warham recorded, sick up from the lower deck as an aid on the upper gun deck under the weather side of the forecabin. This was, 18 feet in length and covering the space of two gun ports was berthed on the outside of the ship's gun and was furnished below, as a third store. The entire space regarded as the ward

Peter Goodwin (1986) *Ship 1814 vol. 1: A Hospital at Sea* HMS Victory

contained some 22 beds or cots. At the stern end of the deck adjacent to the transverse bulkhead bulkhead was a dispensary area 8 feet in length.¹² This dispensary comprised work table, generally served as a daily facility only whereas the main dispensary was used down below on the deck adjacent to the surgeon's cabin.

As Commodore or Chief Surgeon welcomed Markham's concept and sent the following directive to the rest of his fleet: "The Commander or Chief positively orders that no sick are to be kept below the upper deck or over bow of ships ship under his command and that a sick berth is to be prepared in each (ship) under the foremast on the starboard side and a simultaneous order for the rest."¹³ The simultaneous was an internal order both into the fore side of the bulkhead bulkhead, entry being allowed via an internal door under the foremast. Before Surgeon's instructions could be implemented, it was necessary for the capture of ships to have the table and legs removed from under the foremast. That however was not always welcomed the crew of one ship complained about the removal of "the dignity and suffering the name to comprise manhood in the weakness of the man."¹⁴ Interestingly, the main point arising in the controversy being used under the, Sick berth too.

- Plenty of fresh air and light.
- Having a segregated toilet facility so vomit could be transferred from the sick to the healthy crew members.
- Being near the pump facility, there was a plentiful supply of hot water and heat that berth could also be obtained.

According to the Captain Blane, the sick berth should comprise an area covering the interval between two guns or any space between decks which is convenient for use as a sort of compartment by means of a partition made from canvas.¹⁵

In construction, the sick berth was partitioned off from the rest of the upper gun deck with bulkheads made of canvas stretched on steel hoops or iron frames. Placed in panels about two feet in width, each were movable and could be easily removed when clearing the ship for action. While the canvas bulkheads remained the goal at the end of the French Revolutionary War and throughout the Napoleonic Wars they were replaced with solid but still panels when peace was declared. An example of this can be seen from the drawing produced by Captain Pechell in the log of the *Sea Breeze* (1817).¹⁶

Following the example of the Mediterranean fleet, the Channel fleet produced sick berths under the foremast in 1799/1800 and in 1800 when St Vincent became First Lord of the Admiralty, unilaterally Order was issued both states that authorising the new location of the sick berth.¹⁷ Drawings relating to these layouts can be found in the Public Records Office.¹⁸ Over the years the term sick berth became colloquially named as the sick bay, the change is sometimes originating from the fact that the designated area was limited in that, they when the ship's side bulkhead curved round to meet the foremast bulkhead bulkhead.

Although Markham is credited with the change in sick berth location, that also was an already new John Keynstone who served as a surgeon's mate during the period of the Seven Years War (1756-1763) records in his memoirs: *The Surgeon's Mate*.¹⁹ that the sick berth as he ship was used under the foremast. That this picture Markham's proposal by some 20 years earlier that, besides the ship in which Keynstone was serving in the concept may have already been adopted in other ships off war at the time. One contributory factor that already substantiated the change in sick berth location during the period relates to the appearance of cotton liquor (sick ships) of was introduced by the Navy Board 24 January 1757.²⁰ Before this date cotton designated for the foremast and the company were always fixed forward and starboard under the foremast but with the introduction of the cotton liquor, more space became free under the foremast under the new legislation. In retrospect it would appear quite natural that some surgeons saw an advantage of the development and in consultation with his commander, formally moved his sick up to the foremast area. Furthermore, we do know from the surgeon's journal of the *Flower* (74) Nelson's flagship in the battle of Santa Cruz in July 1797 that this ship had a sick berth used on the starboard side under the foremast.²¹ This again negatively proves the Green and clearly suggests that Markham's concept was certainly not original. The reason why sick berths were used on the starboard side of all ships when the foremast side was effectively a narrow margin, usually means always. Although I have some serious doubts regarding this point at present, there have yet to be substantiated other further research (1968).

The contents of berths for the entire sick berth was demonstrated in public rooms, for opening the privation conditions were intended to well below decks. In line of battle ships the one taken over as this subject was greatly opening doors - was generally the after cockpit situated on the wing. In the engine rooms and lower deck, which had no crisp deck in the mid-stem, the casualty system was generally used as the gun rooms in other part of the battery deck, the workroom or various more tables being used as operating tables. Inexpensive that this table lights below decks and conditions were very constrained. Here, within the confines of the ship the surgeons operated under less favourable open a makeshift operating table that was commonly used by the midshipmen or others in the case of (English war) a midshipman. The surgical team brought down and laid on canvas spread out in the wings of the deck, each waiting his turn to see the surgeon in the berth that he was brought to the deck, irrespective of rank. Customary to popular belief, the deck, planting surfaces of the ship were not poured soil to digress the patients of blood. Besides the reasons for this (because of malodorous there is no requirement to replace on the matter further within the berth).

The general concept of the surgeon in battle is that he spent most of his time supervising berths. For this purpose was convenient because there were many other wounds to deal to not with operating facilities that surgeons (surrounding) and holding wound patients and their (cannot) away by being debris and also (However) the surgeon would also have to contend with large, caused by vapour, efforts during battle. While referring to (Wander) derived in the *Journal* of 1762, (Rodney's) correspondence with the General of the Admiralty from the following passage from:

- That a sick berthing process to treat the berth in persons that passing and leaving deck when they fight the weather side of a ship. That according to that, gives occasion to a number of accidents by landing men catching the fever powder and taking fire to themselves;
- In the use of green gall tables and small powder-burnt mats of a corner of the large lower gunworks in our wharves, great quantities of powder were consumed and exposed to accidental fire;
- The use of berths which was purchased and great success in several ships, and was found

to make the operations in the berth go and more expeditious.

Many (last) point is quite important. Flats lower of the tables were very common due to the method of firing a gun where loose powder powder was poured from a powder horn down and around the vent of the gun and spraying out of a clear muzzle held in a hand held bucket.

When firing in the battery the level is quite close to the powder which when opened the thing was from the vent of the gun caused by the height of the deckhead above, could reach a height of water up to eight feet above the gun. However, with the introduction of the powder only 1749 a flintlock mechanism used a gun that had a shutter, the spot position of that beam was virtually sealed, and a weight.

To conclude the treatment below improving the conditions the berths, and the medical welfare of the seamen in the age of Nelson did follow the same ideology and patterns used in both naval and civilian hospitals in those. When circumstances such as proper conditions and materials remained to be resolved, the situation in which naval surgeons conducted their practice (containing with respect to their treating accidents and battle casualties, surgery and general influence was, in some respects, of considerable skill. Moreover, in fact and many miles from a safe or friendly harbour ship's surgeons very much worked on their feet, and slipped themselves in every conceivable or new situation that presented itself. In short the naval surgeon however initially characterised in popular history, wasn't very much in the forefront of his profession. However himself already for that the berths dealing with men he also successfully treated his opponent's pay days during them with. (However) *Diary, Journal of Ship and Submarine of a Private's Dragoon of Black Cherry, Water and Thomas O'Brien*.

1800). The author would very much welcome any theories broadening the preference to use the windward side of the ship.

References

1. Geoffrey T. Roderick *Ships of the Line* 1999 p24
2. Last, J. *the diary* p 134
3. Gardner, T. *op cit* p24
4. Gardner, T. *op cit* p25
5. Lloyd's (English Maritime and the Navy 1500-1700) Vol 10 (1700-1800) (London 1980) p2
6. Mary O'Brien *Black Cherry* (New York 1997)
7. Leary, J. *Ships of the Line* 1999 p24
8. Ward, Dr O'Brien *Ships of the Line* Vol 1

Health in The Royal Navy During the Age of Nelson

Nelson and his Surgeons

L P Le Duff

12 April 1794	Battle of Leda, Corsica	Injury to right eye
18 February 1797	Battle of Cape St Vincent	Blow to right with a musket
24 July 1797	Attack on Tenerife	Loss of right eye
1 August 1798	Battle of the Nile	Wound of right temporal
21 October 1805	Battle of Trafalgar	Head wound

Fig 1 Table showing the date and place of the wounding of Nelson and wounds

Lord Nelson was wounded at least on five occasions (Fig 1) the number of wounds probably not being limited as his officers, seeing it such a shame to be laid. The story of how he received these wounds has been described as 'died on many occasions' and that of his head wound is one of the most famous in English history. It is not my purpose in this paper to recapitulate in any detail how Nelson received his wounds but rather to consider them, and in particular the wound to his eye, with a view to seeing how they illustrate some aspects of surgical practice in the Royal Navy in the late eighteenth century. I shall say nothing about the third wound for the surgical experts say an integral component of the current debate of his wounds, which will surely be re-addressed as time goes by.

In July 1794 Nelson was serving aboard in Corsica supervising a battery of guns which he had landed from the *Agamemnon* and which were engaged in the siege of the fortress at Calvi. On the afternoon of July the 12th he was struck on the right side of his face by a shower of galled bullets up by a shell from the fortress hitting on the ground close to foot of him. Nelson fell to the ground with blood streaming down his face and instantly made light of his wound saying to Lord Hood that evening 'I got a little hurt, but nothing too much so you may judge from my writing'. In a sense he was correct as

this wound was for the injury to his face was superficial and healed without significant scarring, but as he himself wrote recognized this was accompanied by serious injury to his right eye. Not as he wrote to his wife on August 17th a month later his injury. Although the blow was so violent as to inflict a great deal of blood down my head, yet I am constantly occupied having only my right eye nearly deprived of its sight it has not closed but so as to prevent it the eye to be able to drawwards light from darkness. And all purposes of seeing is preserved however the blood is nothing but to be perceived rather well.

From his many patients in the years after this injury it is clear that there was no visible evidence of damage to his right eye, so that we can only conclude that the importance of sight was due to a serious injury to the posterior chamber of his eye, probably to the retina. I do not have to say in this sentence that there is no evidence that Nelson ever wore a patch over his right eye although he did wear a cloth attached to his hat.

On two occasions Nelson played a part in the death of his opponents sailing in Corsica. There was a victory in two engagements first in the battle of the gun the day of his injury, secondly and possibly as the end of them was agreed by Matthew Jeffreys who later played a major role in Nelson's surgical story.

Nearly three years after the injury to his eye on February 18th 1797 at the Battle of Cape St

the smallest vessels could be identified and exposed. This was done by passing under the vessel a curved needle, with a thread or silk suture, in such a way that a portion of muscle was incorporated in the suture.¹¹ These ligatures were left long, protruding from the wound. The wound itself was not sutured. The whole procedure probably took five minutes.

After the operation Nelson was given Pfl-Cay, a mixture probably containing about 50 mg. of morphine, a narcotic and dose, as then it is not surprising to find that Nelson arrived comfortably and that some two days later he required a dose of opium and phlegm. Initially Nelson made a satisfactory recovery and remarkably he wrote his first letter with just ink found in Sir John Astley, on the third day. As the wound continued within the limits of ligatures remained, with a little oozing they could be withdrawn from the wound. This happened satisfactorily with all but one of the ligatures in Nelson's stump, but when after an uncomfortable journey home on the *Regent* (because he passed his wife in Bath on September 1st) that of about one week after the operation this ligature did not get exposed, he could not support it by drawing, and he still required opium at night to give him sleep. Within a few days Nelson and his wife travelled to London to visit, further medical advice. The reason why the ligature remained exposed in the wound was not clear. It had been suggested that tubercle suppuration explained a nerve in the ligature against the healed artery, but this is unlikely and it is altogether more likely that it was due to the incorporation of some tough fibrous tissue in one of the ligatures. In the weeks after he came to London Nelson was seen by a number of distinguished physicians and surgeons. At one time it was suggested that he might need a further operation, which would certainly have been a dangerous procedure. His ultimately was eventually provided and on November 10th when he made what a great night's sleep and the drainage tube removed for ligatures came away painlessly with them. A few days later he walked with his wife to St George's, Hanover Square, and left a brief note for the person to read on the following Monday. An official doctor to visit shortly in Edinburgh, and for his perfect recovery from a severe wound and also for many doctors followed on him.

During the time that he was in London on two occasions Nelson presented himself to the Court

of Directors of the Admiralty, to appear, first to the Royal College of Surgeons. Then, weeks after his arrival he presented the very same Court, but he had obtained three years previously in Quiana concerning his eye wound, that was healed, or fully equal to the best of an eye. Then in March 1795 he appeared in person for the operation. Attending the trial of his case. There as, of necessity, for the last course the payment of £25 to Louis Boucher and £15 to Thomas Brindley reducing due to those days surgeons were paid less for treating officers.

Nelson was certainly unfortunate in the rough illness he had in the hospital of his stump, but he was fortunate in another respect. Following the exposure of a limb it is almost inevitable that at least in the early weeks the patient feels that the desired limb is well preserved and so called phantom limb. Very commonly at least initially this phenomenon is painful and characteristically over the weeks it gradually diminishes in size and disappears. Surprisingly late for a brief interview in a room from his brother William, to whom is clearly a small phantom, there is no risk since in London having experienced this phenomenon, so he can reasonably consider that it was never a major problem for him.

And so on April 10th 1795 Nelson left Scotland in the *Warrant* for the Mediterranean and on August 1st he finished the trip. At about 1.30 pm on that August evening Nelson was awoken over the night by a pain in the thigh. Transformed by a flap of muscle and with blood pouring down over his face he fell on the deck saying, "I feel dead, remember me to my wife." He was laid down to the cockpit where he was met by the ship's surgeon, Mr. Brown, who



Fig. 10. First showing the scene in the cockpit of the *HMS Warrant* on the evening of 1st August 1795.

Health in The Royal Navy During the Age of Nelson

Health in the Spanish Navy during the Age of Nelson

Julian de Zulueta

There is nothing more appropriate than to speak of health in commemorating the great achievements of Nelson leading to his glorious victory in 1805. For it was the superiority in health, as much as so many personally acknowledged in the naval superiority that made possible the destruction of the Combined Fleet of France and Spain. The great glory in all military ventures is health. Nelson had sightly and red health even more than superior; primary or secondary was the disease factor in Trafalgar. We will not later in detail what was the factor that supports this statement but before doing so we must look at the health conditions of the Spanish Navy, one of the main opponents of the Royal Navy in Nelson's time.

Spain and Portugal had been in the Age of Discovery, the first to face the great problems of health encountered in long voyages. It was Vasco da Gama, sailing around Africa, who first carried his first crew before anything else. After in 1482 the voyagers described longingly smelling guinea fowls, guinea fowls, but so that the da Gama's men were suffering from scurvy. The symptoms he passed from what is said to the captain of the expedition that they wanted to stop because of the Portuguese with scurvy. They had been engaged in long voyages across the Atlantic but when they returned wanted to them a new disease which they did not know how to cure. It was from the Azores engaged in the slave trade in the Atlantic port of Pernambuco and Malindi that they learned how to cure scurvy with oranges and lemons.

Da Gama was followed by other Portuguese travelling to the East and learning, like him, about scurvy and its treatment. That of them was Magellan who was later to meet the Spanish

armada and who had to face scurvy again crossing what he called the Pacific Ocean which proved not so peaceful when others after him had crossed it. Among them was Juan Sebastian de Elcano who took the *Pinzon*, the only ship left of the five with which Magellan sailed in 1519, was the first to go around the World. He died commanding a ship in Lemaire's expedition in 1521 again crossing the Pacific, this time slowly and humbly. Lying among members of the expedition including Lemaire himself. In most cases of the survivors of the expeditions, Andrés de Urdaneta, who later in life, in a job of language in expeditions in 1564 succeeded for the first time in crossing the Pacific from West to East, Juan Menda in 1565, following a more northerly route than had been tried before.

Urdaneta's crossing lasted 109 days and from the moment of the expedition it is clear that they had to face the problem of scurvy. He stopped the progress of the disease there is no mention of deaths during his crossing. The Spanish explorers, and navigators, were aware by lack of the benefits of fresh fruit and vegetables and more particularly of oranges and lemons which the Spaniards had been passing on the Atlantic shores and on islands of the Pacific, such as Guam in the Marianas for the reinforcement that was the expedition made of the voyagers.

The expedition of Francisco de Quesada in 1595 showed the necessity of the Chinese Maltreated by its low intensity. If we compare the voyage of Quesada himself and that of Vasco da Gama, the total number of deaths was only two among the 130 members of the expedition; one of them was the captain of Quesada, who died, we are told, of old age. This is a remarkably low mortality considering the miserable conditions suffered in expeditions in that time and considering also the magnitude of the voyage from Callao in Spanish Peru to the New

Dr. José María de Zulueta was retired was a consultant for World Health Organization.

Hindles – who Quirós called the *Academias* and *Esperos* House – where the first steps of the expedition had ended, partly and from there separately Quirós to Asunción and Torres to Trinidad, leaving the third that Torres led later. There is evidence that the members of the expedition of the use of fresh fruit: the coconuts and vegetables such as yams, obtained during the voyage to replenish the *comestibles*.¹ Doctor Martínez indicated that Quirós supply of yams lasted in Asunción.

There is no mention whether Quirós and Torres no more departed from America, had taken notice of human guano but we have confirmation of the simple use of such manure, by the Spanish Navy in the 17th century. There is for example a list of medicines left over by the *Armada de Filipinas* in 1613. There is mention of 13 boxes of human guano, explained earlier by the fact the necessary was made and further down the list appear five barrels of the said human guano of little or no use. The members of human guano are remarkable even if they were to be used by a whole *Armada*.² Of interest is also the fact that the birds and barrels appear in a list of medicines, and not in *provisores*. Human guano must have been used for the treatment of scurvy but not for the prevention of the disease.

When we come to the 18th century, approaching the Age of Nelson, human guano was clearly considered as a most effective treatment for scurvy but its use as a preventive of the disease, in the way it was used in the Spanish Navy, did not appear to have been the practice on the Spanish side. However we have the statement of Lardbated, a Spanish physician writing on naval health in 1760 that the juice of lemons and better oranges are a most sovereign remedy and a sure means for the prevention of scurvy.³

On another occasion I had the opportunity to call attention to the superb text, with all Royal Laureates, "on extremely well-informed medical writer. As was pointed out before," he, Count of the science's health was written before 1764 and what he says, leaves no doubt about the experience reached to learn from, in Spain. Laurence tells us that the most indisputable preventive on board a ship are tangierons and better oranges, and these particularly lemons and lemons. There, indeed 50 times effective manure, than these fruits". He considered lemons "superior" to the others and thought it was worth keeping them wrapped separately in their

paper before using them as barrels with dry sand.⁴ The long investigation he requested was used for lemon juice as preventive in the way recommended by Lind. He doubted that this was as effective manure, but he was also doubtful about the nature of lemon juice preserved with spices. By then 1760, he had been acquainted with the *Colloquium* in which all perseverance of lemon juice,⁵ but he failed to see the disease effect that this method would have on the health of the English against Spanish naval affairs, stated Lardbated's doubts of the distribution of spices to the lower deck. What was preferred and what was not to long, dried spices, were reluctantly accepted.

But we never saw in that probable as the most important contribution in terms of theory and practice to health on the Spanish Navy in the Age of Nelson. We see reference to the Malaga experience, leaving from 1758 to 1764 and covering what Malaga with the dominance of the famous Spanish Monarchy in America and the Pacific, which has been written about the great expedition can, I thought the subjective the symptoms on "The influence of various open wind and maritime history, held under National Museum Maritime Genoa, in April 1998: the when arriving on sea, in when was written by members of the expedition about sailors' food and health and, at the same time, what was the health record of the expedition crew."

We have to consider in the first place the publication on maritime medicine of Pedro Mateo González, one of the surgeons of the expedition. His *Theory of the diseases of sailors*⁶ published in 1683 was read and appreciated in France, as in a publication on his

Theory also.⁷ Based on the experience of the Malaga experience lasting five years and about two months it is certainly one of the most interesting publications on maritime medicine in the Age of Nelson. Scurvy looms large in the *Theory of Diseases*. He believes in constant attendance and regular exercise as means of preventing scurvy on long voyages but he is fully aware of the dietary role of fresh vegetables and fruits particularly citrus fruits, in the prevention and cure of the disease. He acknowledges the debt of naval surgeons to Lind. The demonstration on board the *Voluntary* of the value of lemons and oranges against scurvy is much followed. Medicine is a science of facts, González tells us⁸ and the results of the experiments on board the *Voluntary* were stark facts. González acknowledges respectfully

shows the low formal seaming of Captain Cook about the virtues of scurbutics and with his words the echo of those of Milne's posing on the same subject.

In an exchange of letters with Don José Salubra, Chief Medical Officer of the Spanish Navy before the departure of the expedition, he tells Salubra that, of the good effects of scurbutics on packed cabbage, there can be no doubt by now, "since only to be measured the usefulness of such or increased better".¹⁷ Milne's belief in the virtues of scurbutics are made to sound on Captain Cook's favourable opinion of them and in the case of the scurbutics on his own experience on the voyage around the world on the *Triumph*. After under his command it is curious to observe that, as his correspondence with Salubra, Milne's does not mention lemons and oranges, although he writes to him after completing his long voyage that on abundant stores of parts of lemons and oranges had been taken on the expedition.¹⁸

Despite Milne's instructions for the scurbutic diet and such recommended by Cook, the record of the expedition as regards scurvy is very good. As Despatch tells us, on the long voyage having sailed several times without meeting land for more than a hundred days, only once we have had scurvy and that was in individual instances for fewer persons, as reported on board.¹⁹ This happened crossing from Acapulco to the Maracaibo and there was only a case of scurvy amongst that was cured in Guayaquil in a few days with fresh fruits and vegetables.

The general health record of the expedition must be considered also a good one. There were 25 deaths out of a total of 380 men, most of the two cruises of the expedition having a complement of 150 men. Most of the deaths occurred on land. Milne's men suffered much from malaria and dysentery in Acapulco as the men in Cook's first voyage suffered in Guayaquil.

Before leaving Milne's it should be remembered that neither in his writings nor in the *History of Cook's Voyages* is there mention of the method recommended by Sir Gilbert Blane for the prevention of scurvy, namely the addition of Maltose, of lemon juice to the grog, 1/4 pint per cup, and mixed round daily in the British service. As Physician on Rodney's fleet in Jamaica Blane recommended the regular distribution of lemon juice with the grog issued to the men of the fleet. This was done in which 10% of spirit of wine (70% alcohol) is mixed

freely had been added to the grog.²⁰ It was a remedy which Blane, he did not know and there was no need to apply any during his time so we can say it was taken regularly. Its use in Rodney's fleet resulted in an improvement of health conditions which is open to the possibility a better primary feeding and better management it can be used that a great part of the success of Rodney at the battle of the Saints was due to the lemon juice well preserved and wisely administered by Blane.

The war with France having ended in 1763, Blane returned to England, he was appointed physician to St. Thomas Hospital, was knighted and became in 1769 a Commissioner for the Sick and Wounded and it was in this position that he could plan from the Hospital the Admiralty the necessary measures for the purchase and distribution of lemon juice to the Royal Navy. The general distribution of the juice had the same favourable results it had had before in Rodney's fleet. Improved health meant improved primary and secondary. Lemon juice also made it possible for ships to remain at sea much longer than before, making possible the permanent blockade of the enemy harbours.

Nelson, who had seen the importance of health on military matters, saw the adverse effects of the lemon juice on the immunity of the men. Being in command of the British naval forces in the Mediterranean he made sure that the French who had occupied Italy could not cross the strait of Messina and transport freely. As his lemons could be obtained from Spain or war with England made December 1800 Nelson made Sicily a real factory of lemon juice. On 14 February 1801 he requested permission from the Board of the Admiralty to contract 28,000 gallons of lemon juice in addition to the 20,000 already allowed to him. 58,000 gallons having been the consumption of lemon juice in the Royal Navy in 1800. These figures clearly show the importance attached to Nelson's Navy in lemon juice. Nothing similar can be found on the opposite side, although Spain and France were great producers of lemons and could make whatever quantity of juice was considered necessary. For one thing they had sea or could not use the Blane's recipe for preserving the juice.

The information we have of the state of health in the two opposing forces in the course of operations leading to Trafalgar shows how great was the difference in health conditions between the British on one side and the French and

Spaniards on the other. The operations which led to the battle of Trafalgar were part of Napoleon's grand design for the conquest of England. He had entrusted the commanders of the French and Spanish fleets, Admiral Villeneuve and Ganteaux, to sail to the West Indies so as to mount an attack on the English possessions there. As he expected Nelson followed them closely. It was there that the Combined Fleet led to retreat to Europe to pick up more ships at Brest and then proceed to the Channel to protect the crossing of the French Army across to Brest. All went according to plan, that is, according to Napoleon's grand design until the long Cavalier bearing Lord Nelson's dispatches to the Admiralty met the Combined Fleet on the way to Brest. Admiral Colling was instructed to intercept them, which he did, but the result was an indecisive action. Villeneuve had obeyed Napoleon's orders, sailed five fleets from Ferrol but Nelson decided to bear up for Cadiz, as he realised that the chances of passing masters of the Channel had vanished and so had the possibility of making a successful landing in England.

Nelson, who had failed to meet the Combined Fleet on their return journey from the West Indies, went back to Cadiz where he wrote to his diary: "I went out there for the first time since the 14th June 1805 and thus having my feet out of the shoes, one year, waiting ten days, he then decided God for not having lost an officer or man for centuries since he had left the Mediterranean." Such was Nelson's character and such was the state of his fleet.

Very different was the situation in the Combined Fleet. The Spaniards had intercepted him at Montevideo 690 tons out of a total 26 dead. On their return journey there were 93 sick and 77 dead, ships the losses with Colling they disembarked 200 sick men from the 14 ships remaining under Ganteaux's command and 1,500 sick men, who were disembarked from the 14 ships under Villeneuve's. Such losses made the shaming of the ships difficult and there was also difficulty in finding replacements in Spanish harbours, particularly, as some of the ships where in condition of rotten hives had diminished the final possibility. So would the Spanish and French ships that were in Trafalgar could hardly match the skill or gunnery and command of their opponents, whose good health, due to the longer peace more than anything else, had allowed them to gain an experience which on the basis of battle would be lacking.

Acknowledgements

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References

1. Nelson, H. H. *Biographical collection of Vice Admiral Lord Nelson Nelson*. 7 vols. Colchester, London 1822-25.
2. *Journal of the late voyage of Spain to Cadiz 1805*. London 1806 and edited by H. G. Reynolds. London 1906.
3. Colling, J. de B. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
4. The voyage of Felix Fernandez de Ojeda 1805-1810 edited by E. Martinez. Madrid: Arca (Spain) 1984.
5. Early voyage to West Indies were called Spanish when he sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
6. *Journal of the late voyage of Spain to Cadiz 1805*. London 1806 and edited by H. G. Reynolds. London 1906.
7. Nelson, J.
8. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
9. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
10. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
11. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
12. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
13. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
14. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
15. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
16. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
17. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
18. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
19. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.
20. *Journal, L. de B. de Colling*. The Spanish campaign in Brest when sailed by J. Nelson et al. Revised Modern Museum (London) 1981.

Operational Medicine

Planning and Conducting Medical Support to Joint Operations

A S Hughes

Introduction

The UK's Permanent Joint Headquarters (PJHQ) at Northwood will for four years end on April 2000. Although most people have heard of the organisation it is apparent that many people still do not fully understand the role it plays. This article is based on a talk given at the COMPLEAT Operational Medical Study Day at the Institute of Naval Medicine in December 1999 and aims to explain why the PJHQ exists, its part to play in the planning and conducting joint operations, some of the problems and more specifically how the PJHQ medical staff perform its functions.

The History of PJHQ

Increasing joint operations as a defence strategy have resulted in a combination of individual and organisational experiences throughout the UK Defence Forces. Whilst this has created a lean and more efficient organisation it has also led to a high degree of military specialisation within the respective organisations of land, air and sea. This factor together with the complex nature of modern crises, means that any military response mounted today will almost certainly involve personnel from all three Services. This is a reality illustrated by the current medical support packages deployed to Kosovo, Bosnia and the Middle East although the system might also involve that medical personnel has been previously being used by the current UNO 'blue helmet' force.¹

Prior to April 1996, a crisis was managed by the formation of a Joint Headquarters (JHQ) composed of a multidisciplinary staff from all three Services but based at one of the three national command centres at Northwood, High Wycombe or Winton. The staff for the air force organisation were seconded by stopgap out

posts² from posts in other headquarters, and sharing their facilities on the day of the crisis. This system created the slower headquarters of what amounted at the very moment they were most needed but more importantly was no joint staff. Individual head links and understanding of how other Services did their business. It was evident after the Gulf War that a better system was required and the concept of a permanently formed and truly joint headquarters was introduced as part of the First Lord's First Defence Review in 1997. In April 1998 PJHQ

PJHQ'S PRIMARY ROLE

To be responsible, when directed by the Chief of Defence Staff, for the planning and execution of UK land, joint, potentially joint, combined and multinational operations, and for ensuring operational coherence of UK Forces assigned to combined and multinational operations, and to deliver, as soon as orders MODUK's military strategic objectives.

Figure 1

PJHQ'S PRINCIPAL ADDITIONAL TASKS

- Monitor designated areas of operational interest
- Contingency plan
- Contribute to MOD disaster planning
- Exercise OPCOM of Overseas Command
- Conduct Joint Force exercises (Tier 2)
- Provide focus for JIC/P planning and coordination
- Address and assess joint capabilities/weakness
- Assist in the development of JF doctrine

Figure 2

¹Supreme Commander Hague, the author of JRP 4-85, is currently reflecting his command experience in UN 'blue helmet' operations and a full part in the PJHQ.

Force. Whilst the medical element there are still over 200 patients, factors that might be considered although many will be suppressed for a specific operation and can be discussed only as an example of the analysis process is shown in Figure 5.

The main output of the analysis, i.e. the prediction of rate of water intake that which when ordered by CMO will be passed back up the chain of command for political/medical advice and further strategic direction (CMO, the direction is provided with a specific task in green, more detailed planning will continue to confirm the gold rules that are needed. A second part of identifying the medical requirement is the estimation of element workload. Simplistically this is based on the application of disease and casualty rates to the exposed population in Risk (PMR) gives medical demand. Disease and/or battle injury rates can usually be assessed fairly accurately from historical disease surveillance records but the assessment of combat casualties is highly subjective and may be the topic of intense debate. It is a PMR responsibility to deliver the combat casualty rate using operational analysis techniques (PMR planning parameters and historical data) that the major task responsible for establishing this rate the medical resource requirement. In this way the medical capabilities needed to support the mission plan such as antibiotics, hospital beds, canteen and laboratory-based blood and chemical processing will not all be identified. The list of capabilities (disease or a least Assessment of Requirements) may be thought of as a shopping list and will go on as the single task is completed or possible. It should be noted that whilst PMR defines the capabilities that are needed as a FLEET LAND and STRIKE Command that commands specific units and ships to meet the requirement. This is very much an exchange process between all parties including the DGA and MHA but over time a Joint Force Element Table (JFT) will emerge with all the units named personnel identified and equipment listed. As the plan matures the JFT will be further refined to provide the order in which units and equipment staff arrive on theatre and then then be added known as the Directed Order of Arrival (DOA). In the medical context it is important that support is built up as theatre is a balance of release and is proportionate to the arriving force. This needs change but everybody has a good intent only time frame elements should arrive first and ensuring that medical support is not

compromised as the DGA process repeat contact/mission.

Having identified the medical COMOPS on the list of medical capabilities needed, the next major output of the planning process is the production of the Joint Communications Document (JCD) a document to the JFHC which has been to work, has to play the game when it arrives at the gold criteria and includes comprehensive medical issues that will provide the necessary medical information as guidance they need to implement the plan. As well as outlining the medical COMOPS the medical assets given crucial battle information (e.g. communications and medical prophylaxis requirements) and identify the command and control arrangements in theatre. Normally a single medical command (the small staff element) with functional control over all theatre medical assets will be appointed as the JFHC's medical adviser. His top level job is to liaise with the various single service medical representatives from the various components. Commanders (theatre level and spread across and beyond) and coordinate the delivery of medical care throughout the area in support of the overall campaign plan. Whenever the arrangements the medical commander and other key medical staff would be invited to become involved in the PMR process at the earliest opportunity and certainly well before they deploy from the UK.

Deploying, Sustaining and Recovering the Force

It is easy to focus on the planning process exclusively but the bulk of the daily PMR workload is actually involved with sustaining the force after it is deployed. Once the decision is taken to deploy a force, the CPT leads and this usually follows in an Operations Team (OT). The membership of the OT is always identical to the CPT (including the medical expert element) with the main difference being the lead now lies with D (PMR). The OT needs regularly to coordinate staff effort and work in the theatre to ensure the all necessary and ongoing staff work related to that specific operation. Whilst core OT personnel are dedicated to a specific operation, operational advisers (such as medical) do not have this luxury and may find themselves involved in multiple OTs and CPTs running concurrently. In addition to the day to day medical staffing issues that pass between the deployed JFHC and PMR, the Operations Commander (OBCOM)

Cyprus and the Falkland Islands and FROG's other main contracts, contingency planning is a full demand on medical units. It is extremely important people that recovering a total lack to care being lost in the event of an operation—there is a potential trap, at already Additional uniting personnel not only deployed into a foreign area to the security of a base and maintaining a hospital and comprehensive medical support package for the forward FROG (quite a backlog of demanding requests can be as challenging as the medical plan in the support deployed.

Viability

One of the biggest problems facing those involved in conducting medical support in deployed operations is the increasing reliance on medical capability in the light of the increasing support for the various UNO mission areas. It is imperative that the original capability requirements identified in the event of an operation is not over-egged (the degree the objectives of an actually emergency it can be difficult to define the exact requirements in an uncertain operational situation. Once the forces deployed and the threat is more clearly defined the personnel numbers can be progressively reduced but eventually as some point an acceptable minimum will be reached beyond which further reduction is counterproductive. The initial force deployed in Bosnia consisted of over 1000 medical personnel for over the last 12 months has reduced to less than 240 as a result of a reduced FROG. It is probably time to say that at this time the available resources has not been reached—increasingly, the medical force in Bosnia (despite regular manpower increases) has remained at approximately 200 for the last three years. Assuming the FROG and the medical force remain unchanged (or reduce, greater medical aid is deemed acceptable either over creative methods of supporting the UK forces now be required for as long as the force

remains & played in Bosnia (initially by the UK, Kosovo) force efforts has gone into reorganizing the international military pattern to share the medical manpower burden with good results. Of the 40 posts within the UK, support in Bosnia (all personnel killed by UNLA personnel) daily shifts are now permanently sent to UK with the remainder either rotating in and to Canada, Netherlands or Czech Republic. Looking in the other way we have reduced the UK commitment for support in Bosnia from eight to three months (the last year is there a three month shift) since the hospital is manned by UNLA personnel from all three Services (the is good news to all of us). Considerable effort continues to support such arrangements by the full and with careful management will hopefully allow us to weather the changing crisis. FROG has led on all these medical needs initiatives and is currently engaged in working with, with Norway, Finland, Sweden and the USA with the aim of setting up a similar international hospital in Bosnia.

Summary

Deployment is a new business for all of us and the FROG medical cell is at the heart of this process. With the likelihood of a continuing UK presence in the Balkans for some time to come the challenge of meeting this and any other new operational commitments will continue to demand a flexible and innovative approach from all concerned. These challenges together with the time and professional aspects of the job make the FROG medical cell a demanding but rewarding place to work and provide a valuable first staff training opportunity for the RMOs.

References

1. Joint Medical Training (JMT) 4-10 1996, Defence for Arms and Medical Services (DfMS).
2. Joint Medical Training (JMT) 4-10, Joint Medical Training (JMT) 4-10 (DfMS) (1996).

Operational Medicine

Joint NATO/Ukraine Workshop on the Radiological Consequences of Chernobyl

The Integration of the Civil and Military Response in the Event of a Nuclear Accident in the United Kingdom

D C Brown

It is now accepted within the United Kingdom and NATO that it is unlikely that military forces will be faced with the prospect of a major nuclear conflict. However, the more likely scenario of radiation exposure to military forces is seen as an eventuality as opposed to a nuclear accident. Thus, avoid nuclear damage to military facilities, weapons or major medical sources. Low body counts, are taken out of nuclear materials and exposure to a single dominant nuclear event. There has had to be a major change in planning philosophy and military units are now be prepared to work much more closely with civil authorities. This paper will discuss the role of the UK military within nuclear accident response, the management of radiation casualties and the UK public health response. Although specific to the UK, the organisation offers a possible model for other countries.

Role of military facilities in Nuclear Accident Response

The military has large amounts of equipment and personnel which can be employed in response to a nuclear accident. However, there are specific medical health players and monitoring assets. There exists a group of five specialist medical officers trained in radiation medicine based at the Institute of Naval Medicine (INM), and the expertise of other specialised medical officers in the nuclear assistance team. Health physician support includes the Defence Radiological Protection Service (part of Defence Environmental and Research Agency) which is co-located with the I N M in Aldershot, and cover spans the response to radiological hazard. Finally, the UK has two main monitoring assets:

the Naval Emergency Monitoring Team and the Royal Air Force Mobile Control and Monitoring Force. Both teams can deploy to either a reactor or a weapons accident and have operational roles. The overall organisation is structured on a regular basis.

The UK does not have a specific centre for the treatment of radiation casualties. Instead, medical services (including the Ministry of Defence) offer support and training to hospitals for emergency services personnel in the vicinity of their nuclear establishments and involve these agencies in nuclear accident exercises. Casualties with high radiation doses would be treated as radiotherapy or haematology cases which are used to managing patients in emergency options. However, since the loss of the medical expertise from the National Radiological Protection Board, the military offer the only dedicated medical response in the field and their role in civil nuclear accident response is increasing. The task can be broken down into the following:

- Advice to emergency services regarding to a nuclear accident in the management of casualties.
- Advice to hospitals on the treatment of contaminated and irradiated casualties. The hospitals have no expertise in this area, and the military can also offer emergency personnel and radio laboratory facilities for biological monitoring.
- Support and advice to the Director of Public Health in the protection of the public and the public health response.
- Assistance to the media to ensure by providing trained media spokesmen who are able to give background findings to the press on the implications of the accident on health.

Defence Committee for DPC Executive Board of Defence and Radiological Medicine of the Institute of Naval Medicine

Management of Radiation Casualties

The specific management of radiation casualties will now be considered briefly. Obviously the best philosophy is avoidance, and this can include limiting the period of exposure, the distance from the source, shielding and removal procedures. There are however specific subpopulations. A considerable number of research has been carried out into these aspects within NATO in the past decades looking at outcomes against the acute effects of radiation. There are however very limited applications for these aspects since the population focus is toward they need to be given an estimate of the exposure and the level at which they become acute is close to the threshold level. There is however an ongoing research into the applicability of such aspects in the prevention of the downstream effects of radiation and there may be a possible role for them in nuclear incident response, particularly for groups of personnel who could be exposed to high doses of radiation. Another form of subpopulation includes stable effect which can be a blocking agent preventing the uptake of radionuclides by the thyroid gland.

Advancements in many prophylaxis, these procedures however NATO have identified specific subpopulations for use in personnel who could be exposed to radiation and there are STRANAGs covering their use. This area is covered as ethical implications, since the use of such prophylaxis would mask the profound effects of radiation which are the best early indicators of substantial life threatening radiation exposure.

Radiation casualties can be broken down into the following broad categories:

- Downstream exposure which will result from relatively the precipitating source of the incident has been a γ flux, neutron
- Acute radiation casualties who have been exposed to high levels of penetrating radiation such as a nuclear accident
- Environmental casualties there can be either externally contaminated or internally contaminated
- Psychological casualties these casualties occur as radiation's accident when there has been no actual release of radiation such as the subpopulation currently present in society
- Combination of some or all of the above

The most important focus in the management of radiation casualties is to give priority to the management of environmental exposure. This will fall cascades immediately whereas even

potentially fatal dose, environmental exposure the patient may survive several weeks if not months. Furthermore the radiation dose of a patient may not become clear for several days. Although the broad scope of casualties by these releases appears may be possible to monitor via a model in the short limited situation especially under circumstances where medical infrastructure will survive.

Therefore, in the management of radiation casualties the first priority is triage and treatment of life threatening injuries. This is an exposure to establish the radiation injury. Indicators of dose are given by the profound symptoms: nausea vomiting, diarrhea, leukopenia, lymphopenia and symptoms which will occur in the first few hours after radiation exposure. Such a categorization was used a similarity to Chernobyl. If these symptoms are absent it is initially then a life threatening radiation dose has been achieved. Next, some lymphocyte count taken over the first two days can give a broad indication of injury. The adverse affected tissues from symptoms, either by dietary counts or biomarkers in new legislation (HMA). There are a number of other experimental techniques of biological monitoring including survival under development in NATO member states however few are in general use. Finally there is environmental physical domain. Less medical should be given in this than biological monitoring under physical domain only records the dose in the document and not necessarily the patient. It can also be inaccurate.

Once the dose has been established treatment can be considered. In the case of a low radiation dose (less than 0.5 to 0.7 Gy) no symptoms or toxicity other than the discomfort of something higher down up to 2 Gy should be advised to hospital and monitored and it can be established that there is no major injury to the hematological system. Above 2 Gy patients should be admitted immediately to a hematology or radiotherapy unit as prompt treatment may be required. Similarly if high dose exposure or wounded patients will require immediate admission to a specialist unit.

What resources are available for high dose radiation casualties? Again, it is known from Chernobyl that clinical support, poisoning the red blood and haematopoietic components can enable the patient to survive a narrow window and that even hematological system can improve well from covering stem cells. Such

support includes factors, further raising haemoglobin antibodies, and blood clots. Clotting and platelets can be stimulated to multiply and differentiate by cytokines such as GM-CSF which will limit the period and depth of the stage of neutrophils and platelets. If there are potentially life threatening stem cells, transplantation can be considered. As well as bone marrow transplantation other sources include peripheral blood stem cells, cord blood and foetal liver cells, however in all these cases there is a high risk of life threatening side effects such as graft versus host disease, unless a highly identical sibling can be found. There are several new initiatives for stem damage but the consensus is now that extensive needs to be commenced very early with rapid results. There is a considerable amount of research ongoing in this area on cellular transplantation in NMD patients particularly in the US, France and Germany.

Contaminated accident injury requires triage. They should be then managed and decontaminated. Skin decontamination can be easily achieved with simple measures such as soap and water although there are a number of more specialist measures available if necessary. Wound decontamination should be disrupted usually by flushing through with saline before decontaminated is considered. Such patients present little risk to nursing and medical staff. Decontamination is much more urgent in the case of food and poison ingestion, where skin lesions can result if not removed promptly.

If there is a significant internal contamination and the patient has not been wearing respiratory protective internal contamination should be considered as high. An evaluation of the level of internal contamination can be achieved from skin contamination readings, and the UK, Institute of Health Biophysics/National Radiological Protection Board is developing protocols based on the ICRP advice of quantitative surface count probe and more flow samples and urine and faecal monitoring. The definitive criterion is however whole body monitoring. This is rarely achieved in the event of exposures from a major accident but is much more difficult with plutonium contamination, which usually requires a level which, body retention in the UK, there are limited to a small number of nuclear war and agencies.

There are transient incidents outside in the event of internal contamination. These include breathing apnoea, such as plutonium oxide which

prevents the uptake of carbon dioxide by specific organ absorbing agents such as CO₂ for phenomena in the blood or prevent the which prevents the uptake of oxygen from the gut and intestines, while plutonium mineral is known by enhancing fluid retention e.g. a potent water intake, or more immediately dangerous. Finally lung leakage offers a source of infection, inhalable carbonaceous which have been retained from the lung. This is a relatively inf procedure if carried out by a specialist and however in the case of procedure must be followed around the thorax.

In all cases of radiation exposure the patient is likely to be concerned about both the short and long term effects on their health. Appropriate advice on the future should be made available to them to ensure they get the rules in the proper context. They should have the opportunity to participate in a medical research and subsequently the risk.

The complete management protocols are known about the complexity for the fact that when plutonium exposure occurs an individual with other trauma or burns that may be a cytotoxic effect. Hence when should be a suitable outcome does normally have to find when combined with major burns. This is the phenomenon known as combined effects. Furthermore, plutonium exposure is rarely homogeneous and some areas of the body may be exposed relative others are subject to a high dose. This can be handled by breast deprived throughout the body has found or bone marrow, but not so good for simple organs that get the highest dose and the skin. Cancer must always be used in giving a prognosis and the degree of skin damage has been assessed as it may not be evident in initial examination and can take several days to develop.

The current approach to the radiation accident management in the UK is summarised by the following diagram which shows steps 1 (diagnosis and sorting) 2 (taking place in the accident site, in that position, are divided into those who require immediate response management and those which can be monitored and decontaminated before further chemical therapy. If contaminated casualties would go direct to hospital and within the UK, the preferred destination is a hospital designated under the National Arrangements for Incident Handling: Radioactivity (NAIR) scheme) where there will be a plan and some monitoring capability. The ambulance service will normally

level any patient involved in a radiation accident is such a facility. If however there is neither hospital closer and the patient is capable of the transport of his medical condition should take precedence over his maintenance cost and he should go to the nearest facility.



Public Health Aspects

The public health aspects of a radiation accident are also critically important and the military have a major role in solving the local demands of public health who has the primary responsibility for the health of the local population. The overall command and control of such a disaster is coordinated by the patient in the emergency phase, and they adopt a three level strategy known as Disaster Relief and Civil Reserve as at the operational level of the accident site where medical intervention is on the treatment of casualties and the medical care of the responding forces. Salvage will be away from the accident site and public concern with national matters such as the implementation of contingency plans

recommended by C-101 (1978) (e.g., use and co-ordination of contingency including national management of the emergency and local issues. The overall Civil Reserve is at the strategic level and secondarily co-ordinated by the Chief Commander through his co-ordinating Group (CCCG). At this group the emergency services will be represented: the senior military officers local authorities, the Director of Public Health and other key agencies. Media/public relations expertise is also present.

In order to ensure a co-ordinated flow of ideas on matters affecting public health and to avoid long protracted discussions at the CCCG, the concept of a sub-group chaired by the Director of Public Health, and involving all agencies with key roles or responsibilities within this area has been developed. This group is commonly known as the Health Advisory Group and its responsibilities are to protect co-ordinated advice on public protection and public health. This includes monitoring strategy and long term considerations, such as remediation. The debate about this advice takes place away from the top level Chief Commanders Co-ordination Group and the Director of Public Health provides a single agreed line of advice which is therefore robust. Membership of such a group includes Public Authority, local authority, environmental health, National Radiological Protection Board, Food Standards Agency, Environment Agency, Water Authorities and other relevant agencies. The Ministry of Defence is represented on this group by a Senior Radiological Medicine, Hygiene and Health Physicist whose role is to provide expert advice in the group and to facilitate the integration of MOD support. This concept was initially developed in response to MARR Nuclear Accident Protocol, however it has been adopted by the Department of Health and is a useful model for all emergency responses for a major industrial accident or a chemical accident.

Operational Medicine Ready For Anything? (Or a Year With the Royal Fleet Auxiliary)

K R E J Prior

I have to admit my heart sank when the Appointment Officer (APO) presented my clearance certificate (A) to be appointed to the RFA Argus rather than to the one station I did have hoping for after spending most of 1998 at sea with HMS Goshawk. My friends tried to cheer me up by reminding me that I would have a decent bed in which to sleep (not good when on rough), a portaboo (shower which runs) and a ready job (food). An HMS Goshawk is posted to Portsmouth with family accommodation, provided one with a banner bearing the words 'No Goshawk' (Yes, no Argus). And Argus is certainly not.

Argus looks rather like a command ship which sailed this way. Previously the on or command ship *Commander Argus* she was taken up from trade after service in the Falklands. Her command at Belfast and around BHA service in 1988. Her primary role is as the Navy's Aviation Training Ship providing a platform for Operational Flying Training (OFT) for the Royal Air Squadron. Her most important secondary role is as the Primary Casualty Recovery Ship with a 180 bed surgical capacity of 22 Portsmouth located at the Hospital. The ship cannot be classed as a hospital ship under the terms of the Geneva Conventions as she is fitted with joint operational medics, not be utilised and helicopters, can be recovered from the deck and on board. With two ships Argus deck and hangar, three ramp magazines and a lot of accommodation she can also fulfil the roles of aircraft, or vehicle transport, troop carrier or tanker.

I joined Argus in the early of 1999 and quickly found out myself with my new world. I found a specially clean and efficiently run facility with a 5 bed ward and a staff of one Leading Medical Assistant (QARNNS). The ship's company was 120 in number with 70 RN, personnel and 50 RFA personnel in addition to the two medical, the RN Department mainly

as normal of RNARs can accommodate them for their first few personnel with a small Ops Room, Main a small RNAR Room, a Microbiological Room, a small Weapons Electrical Department, a staff's a crewed and a separate. I found myself very much more involved with the general life of the ship including doing evening rounds, being Deceased Officer for the Weapons Electrical Mechanism and Air Sensor Room as well as the Medical Branch R image, Film Officer and Motor Transport Officer.

Initially I found there to be many similarities with warship life but also some marked differences. For example RFA personnel spend only four months on board prior to taking leave before joining their next ship and usually have weekends off working minutes very the average age of the RFA ship's company was 40 years than were the average age of Goshawk's crew. Accommodation is in Maritime Navy standards with double beds and many bunkers for officers and two to a cabin for the Senior and Junior Rates, with shower and lavatory between them. There is also a different hierarchy on board with company being called 'tasks' a the Executive Officer is known as the 'Chief' weekends are seventy-two and PUBLICATIONS are 1000.

The ship spent February preparing for and undergoing Preliminary Sea Training at Devonport. On the day of the Main Machinery Repair from sea, I gladly abandoned my LM40s and had to cope with the sea and argued as I spent the day in Devonport Hospital with a staff which just had been broken with and passed the previous evening as an argument in the case for The crew member is due to take place tomorrow.

The first Operational Flying Training of the year took place in March when 100 Naval Air Squadron embarked. A number of Lynx Mk3 and MH helicopters landed on and the ship loaded with a very tight bay of heavy in some in Port. Argus will not be the display of sea and

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to meander was to visit the fleet there was no going for 44 hours as the ship movement put the lights dark out of limits. Barbary treated many people for sea sickness and ship staff injuries. While alongside, an RFA officer suffered a part fracture of his lower tibia/fibula during a contact match. The local hospital was reluctant to operate so he was flown back to the UK for treatment there. There were also several contact wounds that required stitching usually in the early hours of the morning.

After the CPT preparations for Home Operational Sea Training (POST) began to intensify and a priority was to train the *First Aid* units up to its acceptable level. There were two extra subdeck evenings of rock, handgrenade, in L26/27 and the Landing Aviation General Company. Unlike the RN, a Health and Safety Executive First Aid course is not part of pre-entry training, so did *First Aid* qualifications held have often lapsed. There was a complete change of personnel that week to starting sea training. Landing work plans ran a week and thereafter were always inserted into which ship training, a new one. What the teams lacked in initial qualifications they made up for in their motivation, enthusiasm and desire to succeed making it a very satisfactory experience in CPT.

After initial Home Leave the RN Department moved back to work on 17 May to find a good rate about an increased deployment to the Atlantic was envisaged. This was confirmed by the Navy on 23 May and the ship deployed on 24 May. During the preceding week there was a major rear ship and rates personnel passed to create the PCRS achieved 84 (82 days reduced) as part of a trial run. The newly named postmaster, holder of PCRS 97000 Manager was ill and when a Post Office Medical Assistant (QA007576) joined the ship company and she became responsible for maintaining the PCRS as RN. The PCRS rates were also cut and arranged to coincide up-and-down and every two had to be supported, the remains attached, capital assets removed and to ordered and then replaced. It was a huge job. During the passage across the Bay of Biscay there was King telephone and 50 members of 214 Naval Air Squadron embarked from a HMS *Invincible*. Many were moved when the ship achieved off Gibraltar and the Captain was given the ship's operational taking a few days later.

After entered the Atlantic, on 4 June. At the time a Russian beach group (Glasgow Ship was

shadowing us. Just as we missed the desire of operations there was a short contact in the north west channel, a small boat broke from the forest and a total power failure and, support vessels made was engaged as everything left silent. The problem was soon resolved and the smoke (chubasco) casualties were recovered. The ship was treated as a helicopter operating platform and the helicopter were loaded with munitions control air surface searches and identification of shipping coming or leaving the Italian port. The secondary rules included the provision of a small portowed and more delivery services to the ships and submarines in the area.

Just before the ship's home port and we were alongside once a week for a hospital day. In other words to check the gale and protect the mail. The ship spent three hours in the Atlantic from dawn (start of a medical presence) to the daybreak and providing fuel for the HMS *Malindi* SNFL ship. The ship collected in Sicily and as we were sailing from Augusta in the evening I had a phone call from the Chief Engineer Officer (Capson (E0 0034) who said he wasn't looking very well. I would have said that was an understatement. I found him as two weeks devoted with fever and very short of breath. He had severe pulmonary problems but my relaxed a papillary muscle. He said that my chest pain. After thinking, etc. (E000) and receiving home under support I was to deal with a myocardial infarction. I gave him GTN 200mg of aspirin, thrombolytic and oxygen and arranged admission to the US Navy Hospital in Sicily. From his calling me in landing him there to a psychiatric room on the runway at Sigonella took a little over an hour. The quick return of all we found including the Ops team who led to clean Diplomatic clearance, the surgeon who were ready to go within half an hour and the Flight Deck were a quick preparation of the Flight Deck, contributed to the Chief visiting defensive medical unit promptly. He has since made a very good recovery and is enjoying his medically-induced early retirement. After that excitement, the ship headed home via a rough transition in Barcelona.

The mission was spent alongside in Fardus. As the ship was homing I found the double page of "Medical Officer" but the 4th mail. I found out of the docklands thinking probably from a standard lounge by a gale on the back of his head and a fractured wrist. He had been hit in the face and knocked over by a line during a repair of

convalescence. After joining his head and the dentist repairing his leg I returned to work in late March for alcohol levels. Awaiting removal in an ambulance on standing on board, he, in his formalised under Mepharm Navy rules. As he would have known half the month down the side I thought a blood sample would be a better idea. The results came back showing that he was three times over the drink-driving limit. While RFA policy on the use of alcohol is strictly laid down, alcohol related accidents continue to appear more frequently than desirable and I dealt with several drink related injuries and fatalities. One alongside most of the ship's company leaked over the transom stern and I spent some of the time helping out in HM Coastguard. I found life on a shore establishment to be far tamer than onboard and I didn't ever get to grips with HMS. After Farnham the ship went just as Mary Days in Devonport. About 5000 people visited each day and more were amazed and fascinated to find a fully equipped hospital on board.

September was spent taking part in two important exercises. The first, Exercise Northern Light for Northern Rights as it was known, co-ordinated the activities of the PCRS for the first time since 1990. 100 ships participated joined the ship, ranging in rank from Surgeon Captain to Master, Air-Sea and also included 70 Royal Marine companies. For many it was their first time at sea and I think some of them said, 'like it now!' The PCRS was impacted from its bases and set up to receive casualties. A watch system was worked out and the landmen and women were bound up in another training. Over three nights anti-aircraft simulated, conducted, covered by helicopter on to the Flight Deck and was

conducted down to the PCRS via the forward search light. A quick change was done as the ho descended and a 100 metre wire control net by a JAG. Formalised anti-aircraft light was, at target level. Casualties moved on to seven RH. However, the wind on the runway. Overall, it was very successful and many lessons were learnt from it. Not least that a PCRS always needs to support shore ships.

The second was Exercise Lagoon Side, which involved the HMS in their Maritime Counter Terrorism role. Asper was used in the Primary Maritime Role for the HMS to make an on site that was under the control of terrorism. The ship was working with men dressed in black and the Flight Deck was flooded by heavy with all sorts of material including a Chinese Protonmop, one modern that the 'military facility' upon an anti-submarine and the normally first pass on had to be disposed with parachutes to anti-submarine or garden fertilizer!

The end of 1999 was a return to the primary role. Manta 2000, which went up most in October with the ship clearing the area to allow helicopter operations, lessons ready for Manta 2000. November was back to back CPT for 2000 and 2001 NAVE and the usual range of shore visits based up at the Fleet Bay.

By December 1999 I had had another particularly and professionally fulfilling year so far. I enjoyed combining being 'just another officer' with my medical role. I was fortunate in having an exceptionally competent LMA(O) in my command but even so Asper cannot be described as a 'stable' job and I is thoroughly looking forward to my return to the Surface Fleet and a less hectic (hopefully) time with HMSA Gloucester in the Caribbean in 2000.

Obituaries

Surgeon Lieutenant Commander Alack Smees RFA(R), RFA(R)

Dr Smees died at the Age of 87 on 1 April 2000. He was born in Farnley in the County of Angus on 15 March 1915 and was educated at Farnley Academy and in the University of St Andrews, where he graduated as medicine (MB, ChB) in 1938. He was an outstanding athlete and gained a Double Blue in Swimming and Soccer and also played football for the Navy.

After the usual house job, one of them being at the General Hospital in Liverpool where he met his wife-to-be Winifred, he followed the outbreak of World War 2 he was recruited to a short service Commission in the Royal Navy. Winifred joined the QARNNS as a Nursing Sister and moved to the last hospital ship to leave the Dunkirk beaches during the evacuation of the British Expeditionary Forces. They were married immediately on her return in June 1940.

He was returned to 1940 by the Medical Director-General of the Navy to go to the United States and first as a pilot at the US Navy School at Pensacola, Florida. He was as first the first RN Medical Officer to be sent to work at the US and had been decided that the Navy was going to be very short of pilots in the rapidly expanding Fleet Air Arm and at the US, over their being needed by the Lancaster bomber formations were considered constrained.

After gaining his wings, he returned to the UK and then Farnley, becoming a tin substance crafts. This was a slow business afterwards taken on 'The Laughing'. He moved at his in various aircraft careers and later leaving the Staff Air Medical Officer to Fleet Air Arm Command Training & Administration Admiral Sir Lindsay Syme and in this appointment because an officer in command of the Fleet Air Arm, which was as good as in good stead in later years in civil aviation.

Leaving the Navy in 1948 he joined British Overseas Airways (BOAC) as a flight medical officer at Heath Airport near Bournemouth and in 1951 moved to London to the Assistant Director of Medical Services to Air Marshal for Harnley Woodhams. Formerly Director-General of the RAF Medical Services throughout World War 2. During this time he was actively involved in teaching aviation medicine to BOAC service

and when the Comet 1 disaster occurred in the early 1960s, he was heavily involved in the medical aspects of the investigations in conjunction with the RAF Institute of Aviation Medicine and the Royal Aircraft Establishment at Farnborough.

With the introduction of the medical departments of BAe and BOAC in 1964 he became Deputy Medical Director in the then Air Corporation Joint Medical Service, later the British Airways Medical Service, finally leaving in 1975.

He was widely recognised as international medical circles as an expert in communication procedures and global logistic problems in the airline industry and published a number of papers on these matters. He was a member of the International Academy of Aviation and Space Medicine and in 1975 was appointed a Fellow of the Aerospace Medical Association. In 1977 he was awarded the Queen's Silver Jubilee Medal and was appointed a Serving Member of the Order of the Bath for services to St John Ambulance.

Additionally he was actively involved in the affairs of the British Medical Association and was Chairman for some years of the Honorary Society. He was also a past Chairman of the British Airways 25 Year Club an informal group of employees who have completed 25 or more years of employment with the airline.

Forecasting a severe state of financial he was greatly loved and respected by his staff and at times he gave was, control to management and employees alike & from public for many years he was Captain and later President of the Grosvenor Golf Club a leading golf club in North London.

To his widow Winifred, his son Douglas, his daughter Pam and his five grandchildren, we extend our deepest sympathies in this sad news.

Frank Preston

Surgeon Captain Philip Charles Poillock CVO, OBE, VC, RFA(R), RFA(R)

Philip Poillock died on 11 April 2000 after a prolonged but characteristically stoic period battle against an inoperable disease. He had undergone chemotherapy, radiotherapy and surgery with the attitude that many of us know

was his father's. He was born in London on 28 September 1910. From Eton School, Cambridge School for boys in University College London and was awarded a BSc (Hons) in Anatomy in 1934. He continued his medical education at University College Hospital and graduated MBBS (London) in 1934. He played squash tennis and rugby for the 1st team, whilst a UCL. Following Royal Officer appointments to UCH and UCH (St Peter's) he joined the Royal Navy as a Ship-Commodore in December 1933.

In 1937 he spent several weeks' training transferred to the Portsmouth Liaison Unit and was elected FRCS (England) in 1940. In April 1942 he was promoted Surgeon Lieutenant-Commander and in 1943 he became a Senior Surgeon at Orthopaedic Surgery. He was awarded the MBE (OBE) for Liverpool University in 1945 for which he received the Gold Medal.

After training in Orthopaedics, Philip was appointed to the Royal Naval Hospital, Malta before returning to the Royal Naval Hospital, Haver as Consultant Orthopaedic Surgeon in 1947.

Later in 1947 Her Majesty the Queen requested the then Surgeon-Commander (Fellow) to her Medical Advice on Overseas Tours, a responsibility he held until 1977. He created the Migrants to 26 State Tours to many and various parts of the world. He was appointed MBE in 1951, OBE in 1976 and CVO in 1978.

Philip spent most of his consultant practice at the Royal Naval Hospital, Haver. He succeeded James Watt (later Surgeon Vice-Admiral Sir James Watt) as President of Naval Surgery in 1959 in joint appointment with the Royal College of Surgeons of England and was promoted Surgeon Captain in June 1956. He created the current MED(P) from the RMO in 1934.

Philip was a robust man with a deep compassion for his patients. His practice in orthopaedic surgery was distinguished and set the highest professional standard and example. His commitment and dedication earned many accolades and his specialty and theory earned as long-standing in his references and countless examples.

Philip fully committed himself to all his responsibilities without personal or family compromise and upheld the standards during his tenure. In 1981 and with great grace, he consistently passed the Second Law of the Royal Navy.

He became a Consultant Orthopaedic Surgeon

at Queen Alexandra Hospital, Portsmouth in the Lord Mayor, Tynes, Hospital, Alder as subsequently a Senior Senior Lecturer in Orthopaedics at the University of Southampton and Southampton General Hospital.

In 1979 Philip joined the Editorial Board of the Journal of Bone and Joint Surgery (British and American) and progressed to edit the British Edition from 1984 until his retirement in 1990.

In his retirement he continued his long medical writing and editing from his home and was Chairman of the Defence Medical Services Council, Secretary, Editorial Committee of the Royal Defence Medical College until he is then precluded all further participation.

Philip was contacted during the morning of Thursday 20 April 2000 but later that day a threatening letter for his life, his accomplishments and his friendship, was sent to the Hospital, Church of St Luke, the Royal Hospital, Haver personal tribute to Philip's extensive debt as many of his past and present, friends and comrades friends and colleagues, passed his family to continue his achievement as that service His Majesty the Queen and Her Royal Highness the Duke of Edinburgh were represented by Surgeon Captain David Sweet DSO and by Royal Highness the Prince of Wales in the Medical Service Officers.

Philip's funeral, arranged from Devonport at Haver on 21 April 2000, drew four thousand citizens and numerous grandchildren survivors.

J Jackson

Surgeon Rear Admiral John Keeling CBE, FRCS

Admiral Keeling died on 20 June 1989. Known as John to his peers at Birmingham University which had a statue of John and renowned for his poker playing John joined the Royal Navy in 1936 as a Probationer Temporary Surgeon Lieutenant transferring to the Portsmouth Liaison Unit in 1937 and eventually retired in June 1963 as a Surgeon Rear Admiral at the top of 64.

His early appointments included HMS Royal Arthur, the Coast Artillery Board and HMS Scarborough. Promoted to Surgeon Lieutenant-Commander in 1951 his career then followed the then traditional pattern: commander operations unit, Senior Medical Officer RFA, Senior President Central Air Medical Board, Senior Medical Officer HMS Alden, Senior Medical Officer HMS Hal Far, Superintendent to Surgeon

Service News

Honours list

CBE Sir John Bernard Cronin CBE, Consultant in Oral & Maxillofacial Surgery

CBE Captain P M Handberg AMSC, QANZVC

CBE Surgeon-Commander S J Butler, Lieutenant-Commander J S Bateman, QANZVC

Academic appointments

Appointments to the following positions of the Royal Naval Medical Service which, noteworthy appointments have come to the notice of the Editor

Surgeon Lieutenant-Commander G A Hall, Captain of Operations at Specialist Training at Theatre & Orthopaedics, surgery

Surgeon-Commander D-Jennarides FRCS(Oral), Surgeon Lieutenant-Commander R Day FRCS

Kent Ship's Post J

Surgeon Lieutenant-Commander R Hides FRCS, Surgeon Lieutenant-Commander J M Thomas MBChB(UK)

Surgeon Lieutenant S J Dwyer MBChB(UK), Surgeon-Lieutenant-Commander D Ayres MBChB

Surgeon Lieutenant-Commander CA Perry MBChB

Surgeon Lieutenant S J Meyer MBChB, Surgeon Lieutenant E M Armstrong MBChB

Surgeon Lieutenant-Commander A Barrow MBChB

Surgeon Lieutenant-Commander D W Poulter MBChB (with special)

Surgeon-Lieutenant D G S Blair MBChB

Surgeon Lieutenant-Commander B Gentler, FRCS, FRCS

Surgeon Lieutenant J R McLaughlin, FRCS, FRCS

Surgeon Lieutenant-Commander R J Gray (emer) of the College of Dentists (emer) for 1999

Surgeon Lieutenant-Commander S J Parker (emer) of the College of Dentists (emer) for 2000

Surgeon Lieutenant-Commander L B Cronin, Dentist, Fellowship of the Royal College of Surgeons General Dentists (Fellowship)

Appointments of Civilian Consultants

Oral & Maxillofacial Surgery Sir J D W Barnard and Mr D A Ruppel

Gastroenterology Dr E S Allen

Retirement as Executive Civilian Consultant Professor R T Moore and Mr W T Hendry

Royal Naval Medical and Dental Officers

CBE Surgeon-Commander R D Carr

PROBATIONARY

To Surgeon-Captain, MV Marjan

To Surgeon-Captain (RN), R C Sanderson

To Surgeon-Commander, S E P Bass, J E M. Ewing, A K. Dwyer, M R Green

To Surgeon-Commander (RN), D J McInerney

To Surgeon-Lieutenant-Commander, H E M Adams-Smith, T P Coleman, S E F. McCabe

To Surgeon-Lieutenant-Commander (RN), E E. Norman

To Surgeon-Lieutenant, P M. Gayer

To Acting Surgeon-Lieutenant, T J. Ewart, A T. Macdonald, S E. McInerney, C. H. C. Arthur, G. W. A. A. Hides, E E. Barry, M. A. Allen

NOI SECTION FOR PREPAREDNESS 24 DECEMBER 2000

To Surgeon-Captain, J H. Clark, C. G. Johnson

To Surgeon-Commander, C. E. M. Foster, M. A. Gleave, L. A. Hall, M. A. Nichols, G. Nicholas

To Surgeon-Commander (RN), C. D. J. Radman

SELECTION FOR PROMOTION 30 JUNE 2000

To Surgeon Captain
C F G Barker

To Surgeon Commander
D G Barr M J Gair M D Sewart P S Tanswell

To Surgeon Lieutenant (D)
B A Smith

NEW ENTRIES

Direct Entry
Surgeon Lieutenant J C Brown

Direct Entry
Surgeon Lieutenant RN H E K Green

**Awarded Medical Candidacy on the rank of
Surgeon Sub Lieutenant**
A C McRae M H Lacey C R Hower L E
Waters D Brown A J Stevenson H E Bradley
S G Goshals

PLACED ON THE RESERVE LIST

Surgeon Commander E C Ayles
T J M Spalding
Surgeon Lieutenant Commander (D) A M
Dewar P M M Cuthbert

PLACED ON THE RESERVE LIST
Surgeon Lieutenant Commander M D Chalk
K Greenberg C W Hogg G A H Johnson D W
Pugh B C Thomas

MEDICAL SERVICES

PROMOTIONS

To Commander
S R Jackson

To Lieutenant Commander
F J Garsell C J McLoughlin S T O Colington
B R Rutherford M P Tucker

New Entries
Lieutenant M A Tyrie and Sub Lieutenant J
Dewar G Edwards A R Moody
A Murray R R Patten A D Pugh C A Smyth
A Wyle A K Wile

SELECTION FOR PROMOTION 30 JUNE 2000

To Commander
I C Coulson

PLACED ON THE RESERVE LIST
Commander M Chappell
Lieutenant Colonel M W Kiley

AWARDS

Post-Graduate Awards
I C Coulson MEd
W M Dewar MEd
C J McLoughlin MEd
A Murray MEd

The Lady's Award Award
When Surgeon Rear Admiral Ian Colley retired in 1998 he gave his vessel to be presented to the Medical Services (MS) as having the highest marks from the tips of Junior Officers' Courses, to RAN (Australia). The vessel was to be named by the winner (recipient) their service and then presented to MED(S) for subsequent award. The winner was Sub Lieutenant J Goshals who has recently arrived at the rank of Commander. After consultation with Admiral Colley, MED(S) has decided that in order for more people to benefit from the vessel and more properly reflect the importance of the vessel the vessel will in future be awarded every three years to the most deserving MS Officer of their years service to date.

Sub Lieutenant Vicki Wilson, currently the Staff Administration Officer at HMR DEAR, won the vessel and was presented with the Colley vessel by MED(S) on 28 July 99 at the Defence Medical Services Training Unit.

Act North Fleet Officer's Efficiency Medal
Chief Petty Officer Medical Assistant M Davis 1999/00

Chief Petty Officer Medical Assistant E Shore 1999/00

Voluntary Air Despatchment Medal
Medical Assistant D Powell

QUEEN AT FLANDERS'S ROYAL NAVAL NURSING SERVICE



Mr. John B. White, President of the Army of Vietnam Association, and Mrs. White, standing in front of the building of the Army of Vietnam Association, 1964.

Photo courtesy of the Army of Vietnam Association.



General John A. B. White, President of the Army of Vietnam Association, and Mrs. White, standing in front of the building of the Army of Vietnam Association, 1964.

Photo courtesy of the Army of Vietnam Association.

Index

Abstracts can be taken in printed or microfilmable offprints as text and illustrations, e.g. by making copies on photographs. When a picture or subject might be described best as photograph or from the text it is essential that written permission is obtained from the patient and forwarded with the manuscript. Reports on experiments on human subjects will not be considered unless the protocol was approved by an appropriate local committee and followed, and the author must explain in the text subject gave his or her informed consent. A copy of the letter of approval issued by the ethics committee must be provided.

Typesetting of manuscripts

Manuscripts must be in English as a basic condition for publication in English text periodicals. Illustrations must be prepared with an awareness of the typographical requirements and findings. This should not exceed 32 words. Headings, within the text should be used to highlight the various or different sections. Where possible, manuscripts should be prepared on Word 8.0 or on WordPerfect 6.1 and submitted on 3.5 inch floppy disk. Otherwise they should be typewritten or double spaced on one side of A4 paper. The author must submit a copy of the final manuscript.

Title page

The title page should consist of a concise statement of title, up to five key words, the names and initials of all authors and their appointments, and the department(s), institution(s), city(s), state(s) and zip code where the work was carried out.

Tables and illustrations

Tables and illustrations (figures) should not be on the paper rather than only reporting information presented in text. Each table and illustration should be on an extra sheet page separate from the text. It should be numbered in sequence, responses to the order in which they are presented in the text, and have an explanatory caption typed on a separate sheet for identification.

When photographs or scientific visual data or other documents involving members of the Royal Naval Medical Service are submitted:

Scientific journal illustrations will be microtyped. The names of the plates should be simple when using descriptive drawings to be, oriented or highly desirable. Photographs must be of good quality, glossy, uncut and be provided on separate sheets from 'with captions' page removed off. The figure number refers to many and responses should be marked on the back. Line drawings should be professionally drawn and labelled or of computer created and submitted as photographs print or high quality photocopies. Lettering and numbering should be sufficiently large to ensure legibility after reduction for publication. Technical drawing is not acceptable.

References and abbreviations

References are should be given in the text in which they were made but, whether, copies of World personal documents, or scientific journal manuscripts or print, not matter such must be accompanied by notes (all right there). The required copy of drugs should be used (prescription must be follow as parameters). If an abbreviation is used, the first time which it should be given or full in its first instance in the text, e.g. Institute of Naval Medicine (INM).

References

References, for the accuracy and completeness, of references, for both the subject(s) and these will not be checked by editorial staff. Only essential references should be included and authors should verify their sources, original documents. References be included in the text by superscript Arabic numerals and are numbered and listed (consequently) at the end of the manuscript in the order in which they are first used in the text. It is all list of references should be given at the end of the paper using the format reference adopted by *Index Medicus* or *Index Medicus* (not yet published) should be included in the references followed by 'in cited'. There is preparation (including) any citation for publication personal communications and unpublished observations should be referred to as such in the text only.

References help sheets

The contents of these sheets are not intended to make substantial contributions to the study (public preparation of the paper) should be acknowledged to, should the source(s) of grant support, equipment, drugs, facilities, etc.

QARNNS

celebrates 100 Years of Royal patronage

Queen Alexandra's Royal Naval Nursing Service celebrates 100 years of Royal patronage in the year 2000. Proposals are in hand to celebrate this milestone and also remember all Naval Nurses who served since 1894 and in QARNNS since 1962.

One project under way is to collect funds to refurbish the Chapel of the Holy Marjory in Portsmouth Cathedral. This exciting project will serve as a memorial in a fitting public place to all those who have served in the Naval Nursing Service.

It is believed that some Medical, Dental, Medical Services and QARNNS personnel reading this Journal may wish to contribute to the fund. If so, please forward donations to the Fund Treasurer:

Commander G. M. Conole ARRC
18 Angelsey Arms Road
Alverstoke
Gosport
Hampshire PO12 2DG

Cheques should be made payable to QARNNS 2000 Fund

JOURNAL
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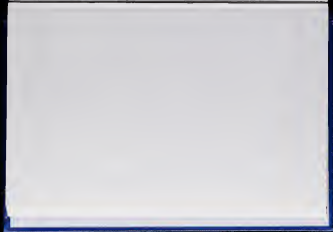
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Answer choice Answer to the question of *Which is correct?*

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Editorial

in 1704 Rear Admiral George Byng and Daniel Mowat, Surgeon of the Navy, signed in the documents of the Admiralty.

And whereas the women were stationed on board as nurses taking up a great deal of room both in the opinion of the captains and surgeons as rather an inconvenience than otherwise (they have done both as no nurses on the last year but are constantly drunk as often the opportunity would permit and then very malicious) We ordered they shou be discharged and men employed instead.

Such opinions today would fall foul of the Admiralty and indeed Admiral Byng was sentenced to death by court martial and shot. It was however Admiral George Byng's son who was shot having failed to relieve Minorca.

The prohibition of women on board hospital ships was found to be no improvement and consequently that it was cancelled shortly afterwards.

I am indebted to Mr John Raymond (Navy MA for this post) for a copy of his document *Royal Naval Hospital Ships 1660-1700* which is worth of interesting information and copies will be available in the Senior Library in the Institute of Naval Medicine, the Library of Exeter, the Royal Naval Museum and the National Maritime Museum.

To continue the saga of corruption begins from the first edition I found a pin in the *Report of Commissioners re the Inquiry into Naval and*

Military Personnel and Resources 1940. The Commission was chaired by the Duke of Wellington and amongst other things considered whether the rate of physicians should be abolished in the naval service for William Russell Physicians. Unsurprisingly the Navy argued for the retention of the rank of physician. Sir Richard Dobson, first surgeon of Greenwich Hospital signed the other way.

For a while now, the *Physician* disappeared to one side on the list of physicians. I am not sure if there be any identifiable amongst the surgeons of the navy there is not and who of us great or ill-served or in short himself not perhaps well qualified for the duties of a physician. I am of the opinion that a hospital surgeon should be higher paid than a physician, certainly so his duties are more burdensome and neither less difficult nor requiring superior qualifications. It is in case of a *Surgeon-Master* to be seen, a physician may provide a wing but there is no testimony of it.

Commissary General and Commissions of Service provided volume is named after Lordships of the Admiralty and the rank of physicians disappeared.

A final footnote to those who knew the names of Royal Navy. What was the *ITC* and *med* by? Some small *QUERNS* officers in industry or White were asked this by the *Commissary* and pointed to *Red* and

Nick Biddick

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anterior of the left middle cerebral artery which were interpreted as a minor infarct (Fig 1). No subarachnoid haematomas were seen. Arteriographic exposures revealed a long tapering segment of narrowing, extending from just distal to the origin of the left internal carotid artery and the artery was completely occluded caudal to this segment from the origin (Fig 2). Both carotid arteries were large, but patent and the opposite carotid artery appeared to be normal. There was no evidence of aneurysm, the internal jug could be occluded.

On obtaining the results of these vascular studies the patient was not disappointed with negative and subsequently negative. Postoperative angiography of the patient's thrombolytic system was requested including Femoral C, Femoral S and aortic arteriogram. The desired results did not reveal any abnormalities.

Her clinical condition improved and she was discharged home after 14 days, having made a full recovery. Out-patient follow up at six months confirmed a normal neurological examination. Repeat MRA examination at six months confirmed that the internal carotid artery had become patent with normal flow.

DISCUSSION

It subsequently emerged that this lady had been having difficulty truly, her diving equipment. She recalled that there had been three strokes to the left side of her neck on several occasions while struggling with the harness. It was concluded that this lady had sustained arterial damage as a consequence of the three strokes

which resulted in internal carotid artery occlusion.

The onset of focal neurological deficits have following diving should always raise the spectre of decompression illness (DCI). However, such cases normally occur within 12 hours of diving and although the possibility of DCI was considered by her referring doctor, the combination of a history of a shattered sternum with mild protein suggested at least on the initial assessment that this could be an embolic process.

Although changes of behaviour, personality or consciousness often the characteristic MRI changes are those of haematomas and/or haemorrhagic vessel changes and the mechanical nature of the MRI changes prompted further evaluation. Carotid artery occlusion may be a spontaneous or trauma induced event and can occur in children, adolescents and adults. Occlusion of the wall of the internal carotid artery may cause a dissection, traumatic syndromes with pain involving the neck, the ipsilateral head and the ipsilateral arm. The hands may be associated with an ipsilateral Horner's syndrome, subtle contralateral focal neurological symptoms or signs.

Many risk factors, ie, more subtle causes of occlusion, stress and TIA history, the ability to fly have several other travel as the cause of the stroke occurs days or weeks later, blood vessels usually cause blood supply to decrease with completely thrombotic or embolic. The internal carotid artery and very rarely the vertebral artery are more vulnerable to direct blow to the neck or to compression



Figure 1. MRI showing area of minor infarct.



Figure 2. Arteriogram showing occlusion of the internal carotid artery.

reference the vascular structure which is prone to rupture and hyperextension injuries at the level of the atlas and axis.

Patients may deteriorate because of stress to injury sustained arising from the decision based on the use of distraction and from the evidence from uncontrolled series of small numbers of patients, many cases are associated with neurological. The prognosis is generally poor with a low frequency of recovery.¹

They present experienced as an pre unreported complications from sports during internal carotid occlusion secondary to their trauma in the neck which malfunctioning breathing apparatus.

References

- 1 Fisher C. M. The benefits and risks of systematic cervical distraction. *Spine*, 1992; 17: 1240.
- 2 Dwyer J. M. Cummings R. A. Injury of the cervical spine. *Neurosurgery* (Ed), 19: 55-61.
- 3 Hynes J. P. Mitchell B. The acute distention of the internal carotid artery in the neck. *Phonet Neurology Psychiatry* 1994; 11: 200-204.
- 4 Fisher C. M. Apple G. P. Vertebral fracture sublethal after neck trauma. *Spine* 1991; 16: 1402-1404.
- 5 Jansing W. Carlson C. Street P. Review, results, hazard control using distraction. *Arch Med Res* 1999; 124: 4-7.

Clinical Medicine

The Lethal Ten per cent Burn

Philip Barker

It would not be an exaggeration to say that all wars are life threatening, but a world news programme suggests that a 10% burn – usually a respiratory burn – could be life saving and lethal. It would not be unusual to suppose or find in the city young tall guy and in the next person (Sister) female, all say severely burns a higher mortality than a given standard male female. It would not, however, be expected that a 10% burn sustained by one person should give rise to mortality in another. The following case report from rural Mozambique demonstrates such a case.

In December 2009 a young woman was cooking over a bonfire when a fire lit up spreading the front of her clothing. Unable to enter because the clothing was enough so to have already started to melt to skin, the female, who possessed full thickness burns to the front of her chest and forearm.

Local care was administered in the form of poultices, made from fat and butter, but four weeks later when the child and the fire had her husband in house three days, she sought permission from the village chief to travel to the nearest town in use of a hospital might be able to help her.

Rural Mozambique does not have hospitals as the state that was introduced there in the 1970s, and the level of care is equivalent to how and diagnosed to the point of death or worst. The young wife's case consisted of a car off suspension chain and some giant bleeding. She wanted a walk, at the "hospital" for this, and was sent back to her village.

When she returned one week four months after her initial burn injury – the front of her chest was covered in a growing crust, weeping pus and pus-like with skin eyes of looking (Fig 1). She was accompanied by her mother but was otherwise unaccompanied by the rest of her community. Her husband was not in evidence.



Figure 1. Four Months after the Burn.

However, the woman she had come to see did not get for the treatment of her burns – she had developed a respiratory compromise to her disappointment. But to prevent her with a small and fragile human female, the inexperienced nurse of her baby boy (Fig 2).



Figure 2. The woman stands at home in day, the child Joseph the English one. Disposition immediate and the rest of the child.

Suppose Commander P. Barker is the Professor of Clinical Surgery at BSH School.

The complete division and of the nipple areolar complex of both breasts stated that breast feeding had had to be abandoned four months earlier and the baby was starving to death. Neither immediate surgical measures nor lack of any vital support and advanced knowledge and quality achieved a successful effect.

Unable to save her son and her son in the village we obtained permission of the chief to take her with her baby boy by helicopter to the hospital, near our living, resuscitation. Despite the pleasure of supplemental fluids (oxygen) and efforts to help with intravenous access, improved the baby was not going to survive and died within 48 hours. The dog had been placed voluntarily in the intervention team, and the rest of the team full of food on

the wrong compartment) was and recovery of the dog, the animal had itself been damaged in another baby.

There was a case in which the lack of the 19th baby was very in excess of the death of the child. The young and otherwise attractive mother had seen the death of her marriage along with that of her son and the conviction of the people of her village continued to produce "natural death" from a lack of medicine, making it necessary.

From 19th hours in the United Kingdom we had produced such a harvesting 2000, certainly more with a permanent reminder of a harvesting equipment started across her chest - and the known that could not save her child.

Research

Electrocardiographic Changes Following Primary Blast Injury To The Thorax

Richard J Gray, Paul E Williams & W Mark Edmondstone*

Abstract

Isolated physiological changes occur following primary blast exposure but the combination of cardiac arrhythmias or ischaemia, transient and/or permanent myocardial ischaemia and/or chest wounds are observed in the human Group II-10 and animal models in primary blast (Group III) and also animals acted in contact (Group I) animals were examined before, during and after blast exposure. Group II animals demonstrated apnoea, tachycardia and hypotension. No significant physiological changes were seen in Group I or III. Group II displayed a variety of ECG disturbances, from ventricular ectopbeats to ventricular fibrillation. All abnormalities appeared to occur within 10 min except in briefly exposed animals. These ECG changes probably result from severe, very rapid vagal stimulation which occurs in some animals following primary blast exposure and may associate the local of apnoea, tachycardia and hypotension. Such observations may have important consequences for the management of blast casualties.

Introduction

Blast injuries are an important cause of civilian and military trauma. The majority of blast related casualties sustain injuries either from the effects of fragments or from body displacement, which are described as secondary and primary injuries respectively. Primary blast injuries result from the pressure of the blast shock wave with the body and are largely restricted to the gas containing system namely the respiratory and gastrointestinal tracts and auditory system. Air embolism and pulmonary contusion account for the majority of immediate

and early deaths. Complications such as Adult Respiratory Distress Syndrome (ARDS) and delayed abnormal perfusion^{1,2} account for most of the morbidity and late mortality.

Primary blast injury is experimental animals results in a local of apnoea, tachycardia and hypotension. These changes are probably mediated by vagal reflexes.^{3,4} By contrast physiological changes reported in humans are attributed to a variety of variable observations.⁵⁻⁷

Changes in the electrocardiogram (ECG) have been observed in experimental animals,⁸⁻¹⁰ and in humans following primary blast exposure. Such changes have been variously attributed to an embolism and/or direct cardiac injury.

This study was carried out to investigate the immediate effects on the ECG of separate exposure of the thorax and abdomen to blast in a controlled laboratory setting.

Methods

Experiments were conducted on 12 male Wistar rats with a mean weight (± Standard Error of Mean (SEM)) of 260 (± 2) g. Anaesthesia was induced by inhalation of halothane (Fluothane, Zeneca, Macclesfield, UK) at a 50:50 mixture, oxygen/air mixture. Anaesthesia was maintained using 0.5% alphasolone/0.5% alphasolone chloride (Fenval, Moss, Uddingston, UK) administered at a rate of 0.5 ml/kg intravenously through a 27 gauge catheter (Picos, Hyde, UK) into a lateral tail vein. Animals were placed in dorsal recumbence on an electrically heated mat to maintain normothermia. Intratracheal cannulae were disconnected and animals were allowed to breathe air. The respiratory rate was recorded using an expired volume (spirometry) placed over the animal's snout. The ECG was recorded via pad electrodes attached to the paws. Blood pressure (BP) was monitored using a cannula

*Richard J Gray (Staff) & Williams (Dr) & W Mark Edmondstone (Senior Lecturer), Department of Surgery, DRA Peter Cross and *Department of Medicine Royal Hospital, Hove.

group manometer (Viggo-Spectramed, Sweden, U.K.) attached to a 25 catheter inserted via the ventral tail artery into the abdominal aorta. Physiological parameters and ECG were monitored and recorded continuously using the PR2PAC 100-30 system (Polaroid® Systems Inc., Oregon, U.S.A.).

Animals were randomly allocated to one of three groups. Group I animals (n=9) acted as controls and underwent all measurements except exposure to blast. The remaining groups received a controlled blast wave from a break-up tube: tubes generator designed in DASA, Puteaux (France). Compressed air at a pressure of approximately 0.1 MPa (1500 psi, 110 atmosphere) was directed by a nozzle to a 0.15-m-diam. diaphragm having the desired wave profile. The blast wave left the device through a 30-mm internal diameter nozzle. Group II animals (n=12) received thoracic blast exposure control on the mid-ventral point while those in Group III (n=10) were exposed to abdominal blast control on the umbilicus. Each unexposed animal was held on an adjustable platform in dorsal recumbency with an upper surface 20 cm from the nozzle of the blast generator.

Following blast exposure of experimental animals, physiological monitoring continued for six hours, prior to euthanasia for histological observations of pulmonary lesions (Difco-Bio-Medex Ltd., Harelow, UK). For accurate measurement was carried out immediately and the lungs weighed following their removal and separation from the heart and mediastinal structures. Hearts were fixed in formal saline and lungs were subsequently submitted for histological examination. The degree of lung injury was measured quantitatively by calculation of the Lung Weight Ratio (LWR) (expressed as Lung Weight (g) / Body Weight (g)). The mean LWR for the animals exposed to blast was expressed as a multiple of the LWR of non-

blasted control animals; this ratio was designated the Injury Quotient (Q) (Thay).

$$Q = \frac{\text{LWR}_{\text{blast-exposed animals}}}{\text{LWR}_{\text{control}}}$$

The severity of the injury was expressed as minor or assigned for Q<2.1, moderate to Q(2.1-3), severe for Q(3.1-5) and very severe for Q>5.

All experiments were conducted under the provisions of the Animal Scientific Procedures Act 1986.

Statistical analysis

Data are presented as mean \pm SEM values unless otherwise indicated. One-way analysis of variance (ANOVA) was employed in comparing mean LWR between groups on each blast site; values of significant time points. Paired Student's *t* test was used when comparing values with pre-blast levels. Significance was recognized at the $P<0.05$ level.

Results

Major Severity Three animals from Group I were fatally injured by the blast wave and died within three minutes of the event. All remaining animals survived on blast until euthanasia. Pulmonary contusions were found in all Group I animals at post-mortem examinations. Group II animals exhibited minimal scattered haemorrhages of varying severity, particularly in the caudal lobe. There was no perforation and no injuries to solid organs. Lung injuries were only seen in Group II animals and minimal haemorrhages only seen in Group III animals. Group I animals showed no pleural effusion or other (thoracic or gastrointestinal tract). Cardiac injury was not observed, nor were any animals in respiratory (mechanically or spontaneously) or any animals.

Lung Weight Ratios were significantly elevated in Group II survivors compared with

Group	Body Wt (g)	Lung Wt (g)	LWR	Q
I	286 \pm 3	1.35 \pm 0.08	0.0028 \pm 3x10 ⁻⁴	
II	273 \pm 6	1.86 \pm 0.13	0.0068 \pm 1x10 ⁻³	1.27
III	273 \pm 3	1.30 \pm 0.03	0.0046 \pm 1x10 ⁻³	0.60

Table 1
Lung weight data. Data shown are means \pm SEM

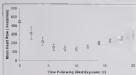


Figure 14. Early changes in heart rate after thoracic blast (Group II rats).

Group III ($n=10$) to 0.0001 ($p=0.0001$) for Group II was 0.21 indicating moderate pulmonary blast injury. The value for Group III was 0.03 indicating the absence of pulmonary injury (Table 1).

Examination of the heart both macroscopically and microscopically showed no evidence of either coronary thrombosis or infarct or other signs of damage.

ECG changes

Following Group II animals demonstrated a significant fall in heart rate immediately

following blast exposure from a mean pre-blast value of 445.5 ± 12.3 beats/min to a minimum value of 175 ± 11.2 beats/min at 10 seconds (Figure 14). The rate subsequently increased gradually, but remained below pre-blast levels for the first five minutes after blast returning to baseline values by 15 minutes (Figure 14). Group I and III animals showed no statistically significant changes compared to pre-blast values. Group II rats also showed a transient increase in mean duration for survivors of 22 ± 4 . This same animals showed a significant decrease in arterial pressure from a mean pre-blast value of

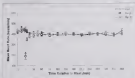


Figure 15. Effects of thoracic (Group II) or abdominal (Group III) blast compared with controls (Group I) on heart rate.

Body No 1st	Long No 1st	EFW	Initial arrhythmias	Survived
115	1-48	0-008	Abnormalities on Waked QRS	Feasibly
145	2-48	0-01	Monomorphic VT	46
146	2-61	0-008	Monomorphic VT Polymorphic VT	46
266	2-63	0-01	Some bradycardia Prolonged T wave	Feasibly
268	1-48	0-007	Some bradycardia	Feasibly
295	1-48	0-005	Some bradycardia	46
299	1-71	0-007	Paroxysmal ventricular	46
254	1-68	0-007	Paroxysmal ventricular	46
265	1-78	0-007	Some bradycardia AV dissociation	46
282	1-48	0-005	Some bradycardia Nonsustained ectopic	46
309	1-66	0-006	Some bradycardia S-T depression	46
287	1-54	0-005	Some bradycardia	46
300	2-69	0-009	Some bradycardia Ventricular ectopic	46

Table 2
Immediate ECG changes in Group II animals

1071 \pm 3 feebly to 481 \pm 5 feebly in five minutes after blast, only returning to pre blast values in 150 minutes after blast.

A variety of rhythm and conduction disturbances were observed in the 12 Group II animals only (Table 2 and Figure 2c-f). All Group I and II animals returned to normal sinus rhythm throughout. For all animals, the returned the Mean ECG abnormalities returned to some bradycardia by two minutes post blast. Of the three animals from Group II that died shortly after blast, two showed an increasing sinus bradycardia. One of these developed S-T

depression after 20 minutes which persisted until death after 60 seconds despite total respiratory effort, the other animal showed no other ECG complex abnormality. The remaining animal had sustained QRS complexes, and an idiosyncratic rhythm that never increased (Figure 3c).

Discussion

This study demonstrates that modern thoracic blast injury produces a variety of electrocardiographic disturbances that are usually temporary but may be associated with fatalities. The accompanying onset of 'spontaneous

myocardial and hypertensive is probably a vagally mediated reflex response.^{11,12}

The electrocardiogram would not reveal several of the various observed cardiovascular abnormalities, which study makes it more likely that these effects resulted from cardiac contusion by the blast wave. This is further supported by the absence of an embolism or gross cardiac injury (experimental animal studies^{13,14}) and clinical observations^{15,16} following blast chest trauma reveal a wide range of ECG abnormalities, similar to those in this study with and without evidence of severe respiratory injury. It is possible that vagal stimulation disorients heart rhythm by its action on the cardiac parasympathetic and autonomic nervous conduction system (sympathetic which may follow chest wall injury)¹⁷ might contribute to persistence of arrhythmias and bundle branch block to be reported for the immediate changes.

Low voltage ECG complexes, with complete compensation¹⁸ have been observed following experimental primary blast injury in rabbits and dogs.^{15,16} T waves and ST segments show changes

with arrhythmias and bundle branch block have also been observed.

Disturbances in the heart secondary to emboli from myocardial infarction¹⁹ thought to be heterotically been considered of equal importance in the production of ECG disturbances following blast.²⁰ An embolus have been demonstrated in the coronary vessels in experimental animals following blast injury^{21,22} and exposure of an acute coronary infarct may result in fatal coronary air embolism with arrhythmias.²³

In humans, widening Q waves and notching of the T waves have been observed following air blast,²⁴ perhaps indicating an alteration in the pressure in the pulmonary circulation. Low voltage flattened QRS complexes have also been observed²⁵ and T waves irregular and ST elevations have been described after blast chest trauma.²⁶ Underwater blast may also produce ECG changes, similar to, of repeated injury, including ST segment depression, notching of the QRS complex and Q waves.²⁷

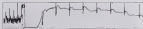
Damage to the heart may occur directly through contusions, sometimes termed

Figure 2 (a) & (b)

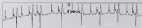
Electrocardiographic changes following primary thorax or chest injury. (Group 13). All tracings are collected on Group 13 film after 10 minutes if duration time of blast.



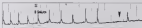
(a) ST depression. Blast has produced some myocardial infarction. Bradycardia caused with a heart rate of 75 beats/min from a pre blast rate of 100 beats/min.



(b) ST segment elevation. The ST early rise and ST segment immediately following blast is caused with heart failure recovered within 10 seconds. As some cases such changes persisted for an hour or more.



(c) *Ventricular couplets*: Multiple couplets were seen in this animal after 30 seconds and prevented whilst it remained apnoeic, but then returned to normal sinus rhythm.



(d) *Atrioventricular dissociation*: A very long PR interval is seen during apnoea occurring 30 seconds after that during which time the heart was seen gradually slowing. This conduction defect was attributed to the latter not returning.



(e) *Atrioventricular dissociation with idiosyncratic rhythm*: There is an immediate change of axis caused by a lower pacemaker. This atrioventricular dissociation occurred unprovoked after 30 seconds and lasted for 30 seconds before returning spontaneously to sinus rhythm.



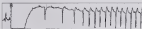
(f) *VT after dissociation*: Period 3 was seen 30 seconds after apnoea 45 seconds after that. This followed a period of ventricular tachycardia (Figure 3b).



(2) *Monomorphic ventricular tachycardia*. This was seen in 2 animals and in both cases lasted less than 10 seconds before reverting to sinus rhythm.



(3) *Polymorphic ventricular tachycardia (ventricular fibrillation)*. This was unusual in as figure 2 shows a 10 sec. tachy. follow up. Most of the tachy. may have been briefly induced.



(4) *Atrioventricular repressing tachycardia*. This abnormality lasted 10 seconds before returning spontaneously to sinus rhythm.



(5) *Electrical alternans*. The subsequent rhythm is a polymorphic VT before returning to sinus rhythm.



Fig 1 ECG from a year of final sleep. There is no clear extracardiac rhythm and the QRS complexes are wide. These abnormalities persisted until death after 1 minute

"conscious cortex" (17) but this mechanism probably accounts for a minority of early fatalities. (18) Abnormalities in the consciousness primary (but related) lesions found within the heart but in many cases in the absence of pulmonary haemorrhage. The breathing machine is an aid of direct intubations (19) where there some effects might be expected to damage brain structures. In normal studies exposed to air and underwater blast only found in haemorrhages in the pericardium (20) myocardium (21) or subcutaneous (22).

The present study demonstrates that a variety of ECG abnormalities may result from moderate primary blast injury to the thorax. While most changes are transient (and arrhythmias may occur) these disturbances may be associated or even precipitated by the established reflex response of apnoea bradycardia and hypotension resulting in complete haemodynamic collapse. These observations may have important implications for the treatment of blast-injured casualties.

References

1. Mackenzie E (1992) Observations on the problem of blast injuries. *Proc Roy Soc Med* 85: 170-182.
2. Chakravarti S, Williams RH (1994) Anomalous and the cause of death in blast injury. *Brit Med J* 309: 335-337.
3. Goss AC, Cripps AW (1975) Histories and of primary blast-related chest and pulmonary lesions. *BMJ* 3: 302-304.
4. Chalk L, Jones P, Mackenzie E et al (1999) Mechanisms of primary blast injury in the presence of the RAE device. *J R Soc Med* 92 (Suppl 5): 205-207.
5. Jones M, Lythall D, Jones M et al (1991) Secondary pulmonary of the lung trauma in a primary airburst from an enhanced blast injury. *Resuscitation* 22: 351-355.
6. Kim H, Kim H, Jones M et al (1997) Primary blast injury after a mortar explosion. *Ann Surg* 225: 480-483.
7. Lee H, Mackenzie E, Wilson P et al (1995) Physiological responses to primary blast. *J Trauma* 38 (2): 353-357.
8. Mackenzie E, Jones E, Lee H (1996) Physiological responses to primary blast. *J Trauma* 40 (Suppl 3): 103-105.
9. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
10. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
11. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
12. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
13. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
14. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
15. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
16. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
17. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
18. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
19. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
20. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
21. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.
22. Mackenzie E, Jones E, Wilson P (1997) Effects of primary blast on the cardiovascular system. *J Trauma* 42 (Suppl 3): 103-105.

1. Grier RL, Winkler D, Dickerson S (1942): Experimental effects of blast injury. *JAMA* 133: 121.
2. Crump G (1959): Blast injuries. In: *Current Concepts: Medicine* Vol 7 Chap 535 D: 1214-1231. Washington: DC: US Govt Printing Office.
3. Winkler DA, Grier RL, Dickerson S (1946): *Blast injury: Blast injuries sustained from the war in Germany*. Bureau: Ministry of Public Health and National Security, Washington.
4. Miller T, Russell T (1970): Blast injuries of the chest and abdomen. *Arch Surg* 100: 24-30.
5. Edmondstone C (1954): Blast injury. *Physiol Rev* 34: 385-386.
6. Sheppard SD, Wilson AJ, Phillips TS (1968): Pathology of primary blast injury. In: *Medical of Military Medicine*, Vol 1, Volume 1: 275-281. Commonwealth Medical Institute: New and expanding office of the Surgeon General, Dept of the Army, USA.
7. Crump G, Taylor (1959) (1970): Description of impact injury to the chest and abdomen. *J Am Surg Assoc* 135: 70-71.
8. Winkler D: Pathology of blast injuries (1959). In: *Current Concepts: Medicine* Vol 7 Chap 535 D: 1225-1231. Washington DC: US Govt Printing Office.
9. Grier RL (1946): Blast injuries: (1946): Pathology of impact injuries. *Br J Surg* 33: 40-44.

Research

Who is watching over me? – Was the public's perception of the anaesthetist changed by National Anaesthesia Day?

S J Tesser and D J Bart

Summary

The aim of National Anaesthesia Day on 22 May 2000 was to inform the public about the role and training of anaesthetists. We carried out two surveys of patients attending Liverpool Hospital Plymouth to assess the local impact of National Anaesthesia Day and to measure the public's expectations of the perioperative visit. The first survey was held one month prior to National Anaesthesia Day and was completed by 78 patients. The second survey was held immediately following National Anaesthesia Day and was completed by 79 patients. Thirty-five percent of the patients surveyed were unaware that anaesthetists were medically qualified. This lack was highlighted by National Anaesthesia Day despite a local information campaign. Information knowledge about our role and training was only marginally improved from 1976. The capacity of patients expected to see their anaesthetist preoperatively for less than 10 minutes had doubled and we are concerned if they had not been seen, our best injury prevention strategy of identifying non-compliance, low performed a white coat has been hidden, must deteriorate. We conclude that the level of ignorance about our profession has not changed since 1976 and the impact of National Anaesthesia Day was not significant. This may be, in a month of the anaesthetist's privileged information, which is known to be an important source of public information on other areas of medicine. If these statistics are to change in the next 22 years new methods of public education need to be found.

Introduction

In January 2000, the Royal College of Anaesthetists commissioned a survey by Market

and Opinion Research International (MORI) to assess whether the general public understood that anaesthetists are medically qualified doctors. Their results showed that only 11% of the questionnaire responded that anaesthetists are medically qualified. Although involving a sample of the general public, this result was worse than the perception of anaesthetists questioned by Mori in 1976 (MORI was founded in 1994 (2)). The Royal College of Anaesthetists requested a clear need to inform the public about who anaesthetists are and what we do. This was the main aim of National Anaesthesia Day (NAD) held on 22 May 2000.

In order to assess the public's knowledge of anaesthetists their training, their role and the impact of NAD on our image we carried out local survey before and after NAD. We also attempted to assess the public's expectations of the perioperative visit.

Methods

The survey took the form of a questionnaire. Among 11 points to adult patients (age > 18) in the orthopaedic, general surgery and gynaecology preadmission clinics. The questionnaire was given to the patients by the clinic staff and was completed and returned prior to the preoperative assessment visit. An explanatory note accompanied the questionnaire that included no information that would improve the patient's knowledge of anaesthetist practice. Pre and post NAD results were compared using χ^2 tests with $p < 0.05$ being taken as significant.

Results

The questionnaire was completed by 81 patients pre and 79 patients post NAD. The age distribution was even with a slight bias towards the older patients in both groups (Table 1). There

Surgeon Lieutenant Commander S J Tesser is a specialist registrar and Surgeon Lieutenant Commander D J Bart is a consultant anaesthetist at Greatford Hospital.



Figure 1. Age distribution of respondents

50% had had a previous anaesthesia, just over half of which had taken place in our hospital. The majority within the last 12 years.

Preoperative visit (Table 1)

The majority of patients (97% pre and 90% post 'Minimal Anaesthesia (low)') would expect to see two anaesthetists preoperatively. They would expect to see them in the night before on morning of their operation with only 9% expecting to see them on the operating table only. Only one third of patients would worry if they had not met their anaesthetist within one hour of their operation. One expected to spend longer than 10 minutes sitting with their anaesthetist with one third reporting a conversation lasting less than five

minutes. That 89% reported good when given the opportunity to be working with an anaesthetist was a little odd but 73% would like to be more a 'case' holder. There were no differences in the responses pre and post MAB.

Premedication

A high proportion (67% pre and 68.6% post MAB) of patients would expect to receive premedication with 41%/44% reporting an injection. 71%/73% tablet, 24.8% alcohol and the rest none.

Details of an anaesthetist (Table 2)

Most people were aware that the anaesthetist decided on the type of anaesthesia (although 12% thought the surgeon made the decision) and monitored the anaesthesia. Only 47% thought that anaesthetists controlled breathing and gave when 28% thought that the response controlled the heart rate, and blood pressure. Seventy percent of respondents thought that the anaesthetist was responsible for giving all the drugs and blood products. Anaesthetists lived slightly better in the area of anaesthesia with 30% thinking that anaesthetists were responsible for possibly stopping short-throats and making the patient pain free. Two percent thought that we watched up the wound at the end of surgery! Only 30% thought that the anaesthetist was involved in looking after patients in the theatre. Case One! There was no difference in knowledge pre and post MAB. Twenty two percent of respondents thought that their anaesthetist would

	Pre MAB (92 patients)	Post MAB (78 patients)
Expected to see anaesthetist pre	97%	90%
When - Daytime	48%	55%
When - Night before	24%	48%
When - Morning of op	14%	39%
When - Operating table	8%	8%
Length of visit - < 5 mins	22%	30%
Length of visit - 5-10 mins	50%	42%
Length of visit - 10-15 mins	18%	24%
Length of visit - > 20 mins	8%	14%

Table 1. Preoperative expectations of preoperative visit

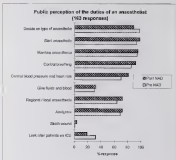


Chart 2. Public's perception of the duties of an anaesthetist

for young men than our respondents at the same time.

Anaesthesia training (Charts 3 and 4)

Surprisingly, percent of people knew that anaesthetists were doctors. R&D made no difference in the level of knowledge. The response did not reveal how old those anaesthetists were. Two thirds of people correctly thought that anaesthetists underwent on job training prior to administering for the first time but 15% thought that animals were used for practice. One third thought that computer simulation were used for assessment and over half thought that anaesthetists would have to pass a written exam. Twelve percent thought that a 'Certificate' had

gone less than three years training. 48% thought that it was years and only 13% knew that it had never in time years. The remaining 12% did not know how many years training was required.

Education

This study was based on surgical patients awaiting surgery without understanding of medical care is likely to be better than that of the public at large. It could be argued that the National Anaesthetists Day response was not aimed at such a group and its effect on them might be less noticeable in a small study.

The questionnaire was apparently well received but there were few problems with

What are anaesthetists? - the public perception
(50 responses pre NAD, 49 post)

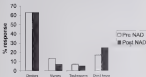


Chart 1

Public's perception of anaesthetic training
(48 responses pre NAD, 49 post)

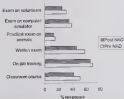


Chart 2

competence. We deliberately kept it small to encourage accurate completion, but with hindsight, it would have been helpful to have asked specific questions about the patients' awareness of the MAM campaign and the sources of their existing knowledge.

What is clear in this patient's report is to be sure by the significant prior to their opinions and that most still expect to receive prescriptions. Previous studies have shown that patient confidence is not influenced by drugs¹ and this was borne out by our survey. The proportion of patients preferring a visit to be when had dropped from 46% in 1983 to 30%. When asked, were previously identified as a desirable item but, only 7% of our patients would prefer there to be no visit at all. Perhaps to what extent have now been identified as a source of social isolation? There is a need reason to change policies. Patients already can then be provided by a nurse judge which the majority of patients continue to prefer.

Since 1984 when Swanson et al found that only 30% of patients thought that the pharmacist's pre-operative activity involved monitoring 'knowledge these activities, not the improved literature. A large proportion of our sample thought that practitioners were involved in more than one procedure as a team.

Patients understanding about the one involvement in surgery has improved since 1981 when a study found that only 30% people knew that anaesthetists were involved in surgery.² This may reflect the widespread development of Acute Pain Teams over the last decade. Awareness of the role of the anaesthetist was management of patients however is unchanged from 1983.

Knowledge of training and qualifications has changed little over the years with an average 50% of people surveyed knowing someone of the medical qualifications. Keep in 1975, postgraduate qualifications, interaction with the generalist and found that those who had gone through surgery were not interested in knowing more. There may be a subgroup of the population who prefer not to know anything about what goes on behind the surgery and accept all efforts on our part will always increase awareness. Nevertheless, some patients do want to know what is going to happen to their and many otherwise people with a fear of anaesthesia to learn about, about our training and qualifications. It is not surprising that people are worried if they think that the anaesthetist may be

looking after several people at one time. We are hopeful that our patients may be more forthcoming with their medical histories if the anaesthetist who we are asking the questions.

It was disappointing to conclude that Mammography Day appeared to be not different in the public's level of knowledge on one day. This does not reflect the great effort put in it several members of the Association. Department staff. An extensive campaign was run around local television, radio and press. Information leaflets were handed out in the hospital foyer on the evening of event. Unfortunately the support who displayed interest clearly had a high level of knowledge. Although we did not ask our patients about where their information came from information has been identified as a popular source of medical education for the general public³ on medical issues and documentaries which high viewing figures. A large study of the anaesthetist in medical stages found a lack of accurate portrayal on the majority of such programs.⁴ The last event marked the start of 123 anaesthetists. Days 100% of awareness is not that this survey are not by anaesthetists but this is only compared to one television program with its and being run by pharmacist or surgeon. I believe that is the main source of the public's knowledge then they may explain why there are no many television options and it may be a more positive method of education that companies such as National Anaesthetists Day.

After all, doctors matter what people think? On a day like this, possibly not. Although it is for the fact that all those years of training are studying go into training by means that should not allow the wrong that we offer. However its patients' misconceptions may allow for the practitioner's and patients' misconceptions are when it comes to allowing length of time, money is paid for.

References

1. Smith B. Patients' Perceptions of Anaesthetists: A survey of the General Public. *British Medical Journal* 1981; 283: 1073-1075.
2. Smith B, Smith B. The anaesthetist: The patient's view. *British Medical Journal* 1975; 283: 413-415.
3. Smith B. Patients' Perceptions of the Anaesthetist in the General Population of the general public. *British Medical Journal* 1981; 283: 1073-1075.
4. Brownie, R. *Medical Education: The effect of the anaesthetist's work on patient attitudes*. *Anaesthesia* 1989; 44: 795-797.

Annex: Patient Questionnaire

1. What age group do you fall into?

- 16-20
- 21-30
- 31-40
- Over 40

2. Have you ever had an anaesthetic before?

- Yes
- No

If yes, was it (were any) at this hospital?

- Yes
- No

How long ago was the most recent?

- Less than 1 year
- 1-10 years
- 10-20 years
- More than 20 years

3. Would you expect to be seen by your anaesthetist before your operation?

- Yes
- No

If yes, would you expect to see them in person?

- The night before your operation
- The morning of your operation
- Only in the operating theatre area

4. Would you be trained if you had not had your anaesthetist within six hours of your operation?

- Yes
- No

5. How long would you expect to spend talking with the anaesthetist before your operation?

- Less than 5 minutes
- 5-10 minutes
- 10-20 minutes
- 20-30 minutes
- 30-45 minutes
- More than 45 minutes

6. How would you prefer your anaesthetist to be dressed when they visit you?

- Scrubs/shorts or equivalent
- Shorts & tie or equivalent
- Smart casual clothes
- Doctors or equivalent
- Therapy clothing
- Don't know

7. Would you prefer further to wear a white coat?

- Yes
- No
- Don't know

8. Would you prefer further to wear a name badge?

- Yes
- No
- Don't know

9. Would you expect it to be given a prize?

- Yes
- No

If yes, would you expect it to be

- An injection
- Tobacco
- A suppository
- A group or class
- Don't know

- 9 Which more of your respondents think are the responsibility of the anaesthetist and which are the responsibilities of the surgeon?
To decide upon the type of anaesthesia, you are to receive
To cut off the anaesthesia
To maintain the anaesthesia
To control your heart lung and what you breathe
To control your heart rate and blood pressure
To give fluids and blood transfusions
To watch the way being operated on, if possible
To make you as good later as possible
To stitch up the wound at the end of surgery
To look after you in the Intensive Care unit if required
- 10 Do you think that your anaesthetics will be giving any other responsibilities in the coming years?
Yes
No
- 11 Do you think anaesthetists are:
Doctors of medicine
Appointed nurses
Technicians
Don't know
- 12 What age group would you expect your anaesthetics to fall in to?
Less than 20
20-30
30-40
40-50
Older than 50
Don't know
Don't mind
- 13 What training do you think anaesthetists undergo before anaesthetising you patients for the first time? (more than one answer may be ticked)
A classroom course
On job training from colleagues
A written examination
A practical examination on animals
A practical examination on a computerised simulator
A practice of examinations on human volunteers
None
- 14 How long do you think anaesthetists practice for before they are able to call themselves a "Consultant"?
Less than 1 year
1-2 years
4-6 years
7-9 years
10 years or more
Don't know

Operational Medicine

A Fish Out Of Water - Medical Support for British Army Exercises in Northern Poland

MA Howell

Introduction

Since 1990 the British Army has used training grounds in Northern Poland to exercise its Armoured Division based in Germany. In previous years around 1000 British troops as a result of illnesses contracted during the exercise. It was felt, accordingly, that some of these illnesses could be prevented by better preparation and several events were raised concerning the provision of medical care to returning personnel.

The senior in Command Adjutant in Aerobics and Emergency Medicine to Medical Director General (Naval) was asked to attend Exercise Ultra Light 2000 to assess the medical care provided to UK service personnel who were ill or injured during the exercise and to advise on possible improvements in medical support. The author was the only Royal Naval representative and was therefore very much a 'Fish out of Water'.

Information was gathered from a number of interviews to determine needs of the 1st UK Armoured Division together with several visits to Polish Military Hospital Wloclaw. Many discussions were held with the Commandant and Medical staff of Polish Military Hospital Wloclaw the Commanding Officer and staff of the 1st Close Support Medical Regiment and the Command Medical Officer of the 1st UK Armoured Division. Briefings, seminars and visits of individual Landships was seen on a number of occasions. An opportunity was also taken to examine the Mass Casualty Procedures Plan that was written during the period.

Background information

At the end of winning the bids of the British Army that is posted in Germany is part of an additional to 1st UK Armoured Division. The division

consists of three Brigades, each brigade comprising in the region of 10,000 personnel. The division provides the British Army with a deployable heavy armoured division with 1000 Main Battle Tanks (Fig 1) armoured infantry supporting armoured units (Fig 2). The division is based in Germany and was deployed in the Cold War time since. The British Army is forced committed to the provision of a heavy armoured division, the provision of which keeps the unit in the Western League of fighting forces.

Each component Brigade of the 1st UK Armoured Division includes a regular medical centre to ensure that a high operational readiness for deployment. Part of this preparation requires services available to many units. Additionally, the British Army has helped training units in northern Germany with an annual Landship Battle exercise. However, various political factors have raised the Army to look, northeast and to new former Western Pact training areas in Poland. One of these the Exercise Thunderstorm Area (DPTA) was the last for 2 Brigades's operational readiness training in Autumn 2000. See Fig 3. DPTA is approximately 100 km by 100 km and is bordered with many small lakes. It has been known as Salsbury Plain with more and more. The area that is used for armoured exercises is the shape of a triangle and increasing size, combined the three parts of the triangle. The exercise area is bordered with the remains of Soviet units (Fig 4) and artillery and is very light pollution. Evidence of pre-1970 settlement is present with the major concentration happens upon shells of old houses. Churches and are chapels.

DPTA is in the northwest of present-day Poland. Prior to 1939 the area was part of the German province of Pomerania. The inhabitants of nearby areas reflect the German influence and the place names were similarly named to present-day before the upheavals of the war and

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Figure 1. Challenger II Main Battle Tank

late 20th Century. For instance, Devotion (Armoured) was called Strathgry and Southdown was Stridol.

The exercise attended was Exercise Ulster Eagle 2000. The exercise Headquarters (HQ) was in Keshopee, the centre was based here. It is referred to as the Head Keshopee, but is, in fact, a village. However, it did provide shelter and a lot of support with plenty of resources.

Exercise Ulster Eagle 2000 was a large-scale exercise involving a total of 5,000 army, 600 civilian, 1,000 military vehicles, and 1,000 other supporting vehicles. Ulster Eagle was made up of four elements:

- Exercise Ulster Barbican, an artillery exercise involving 1 artillery regiments and supporting units of an Artillery Support Group.
- Exercise Ulster Eagle, involving the Challenger II Main Battle Tanks (Fig. 1) and associated infantry units of 20 Brigade.
- Exercise Ulster Lullaby, taking supporting units.
- Exercise Ulster Eagle, involving RAF support units and Polish units.

The regiments and battalions involved in the exercise included 12 Regiments Royal Artillery, 20 Regiments Royal Artillery, 3 Regiments Royal Horse Artillery (in formation of the Royal Regiment of Wales, 3rd Battalion

Royal Dragoon Guards and 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st, 32nd, 33rd, 34th, 35th, 36th, 37th, 38th, 39th, 40th, 41st, 42nd, 43rd, 44th, 45th, 46th, 47th, 48th, 49th, 50th, 51st, 52nd, 53rd, 54th, 55th, 56th, 57th, 58th, 59th, 60th, 61st, 62nd, 63rd, 64th, 65th, 66th, 67th, 68th, 69th, 70th, 71st, 72nd, 73rd, 74th, 75th, 76th, 77th, 78th, 79th, 80th, 81st, 82nd, 83rd, 84th, 85th, 86th, 87th, 88th, 89th, 90th, 91st, 92nd, 93rd, 94th, 95th, 96th, 97th, 98th, 99th, 100th, 101st, 102nd, 103rd, 104th, 105th, 106th, 107th, 108th, 109th, 110th, 111th, 112th, 113th, 114th, 115th, 116th, 117th, 118th, 119th, 120th, 121st, 122nd, 123rd, 124th, 125th, 126th, 127th, 128th, 129th, 130th, 131st, 132nd, 133rd, 134th, 135th, 136th, 137th, 138th, 139th, 140th, 141st, 142nd, 143rd, 144th, 145th, 146th, 147th, 148th, 149th, 150th, 151st, 152nd, 153rd, 154th, 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1261st, 1262nd, 1263rd, 1264th, 1265th, 1266th, 1267th, 1268th, 1269th, 1270th, 1271st, 1272nd, 1273rd, 1274th, 1275th, 1276th, 1277th, 1278th, 1279th, 1280th, 1281st, 1282nd, 1283rd, 1284th, 1285th, 1286th, 1287th, 1288th, 1289th, 1290th, 1291st, 1292nd, 1293rd, 1294th, 1295th, 1296th, 1297th, 1298th, 1299th, 1300th, 1301st, 1302nd, 1303rd, 1304th, 1305th, 1306th, 1307th, 1308th, 1309th, 1310th, 1311st, 1312nd, 1313rd, 1314th, 1315th, 1316th, 1317th, 1318th, 1319th, 1320th, 1321st, 1322nd, 1323rd, 1324th, 1325th, 1326th, 1327th, 1328th, 1329th, 1330th, 1331st, 1332nd, 1333rd, 1334th, 1335th, 1336th, 1337th, 1338th, 1339th, 1340th, 1341st, 1342nd, 1343rd, 1344th, 1345th, 1346th, 1347th, 1348th, 1349th, 1350th, 1351st, 1352nd, 1353rd, 1354th, 1355th, 1356th, 1357th, 1358th, 1359th, 1360th, 1361st, 1362nd, 1363rd, 1364th, 1365th, 1366th, 1367th, 1368th, 1369th, 1370th, 1371st, 1372nd, 1373rd, 1374th, 1375th, 1376th, 1377th, 1378th, 1379th, 1380th, 1381st, 1382nd, 1383rd, 1384th, 1385th, 1386th, 1387th, 1388th, 1389th, 1390th, 1391st, 1392nd, 1393rd, 1394th, 1395th, 1396th, 1397th, 1398th, 1399th, 1400th, 1401st, 1402nd, 1403rd, 1404th, 1405th, 1406th, 1407th, 1408th, 1409th, 1410th, 1411st, 1412nd, 1413rd, 1414th, 1415th, 1416th, 1417th, 1418th, 1419th, 1420th, 1421st, 1422nd, 1423rd, 1424th, 1425th, 1426th, 1427th, 1428th, 1429th, 1430th, 1431st, 1432nd, 1433rd, 1434th, 1435th, 1436th, 1437th, 1438th, 1439th, 1440th, 1441st, 1442nd, 1443rd, 1444th, 1445th, 1446th, 1447th, 1448th, 1449th, 1450th, 1451st, 1452nd, 1453rd, 1454th, 1455th, 1456th, 1457th, 1458th, 1459th, 1460th, 1461st, 1462nd, 1463rd, 1464th, 1465th, 1466th, 1467th, 1468th, 1469th, 1470th, 1471st, 1472nd, 1473rd, 1474th, 1475th, 1476th, 1477th, 1478th, 1479th, 1480th, 1481st, 1482nd, 1483rd, 1484th, 1485th, 1486th, 1487th, 1488th, 1489th, 1490th, 1491st, 1492nd, 1493rd, 1494th, 1495th, 1496th, 1497th, 1498th, 1499th, 1500th, 1501st, 1502nd, 1503rd, 1504th, 1505th, 1506th, 1507th, 1508th, 1509th, 1510th, 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1761st, 1762nd, 1763rd, 1764th, 1765th, 1766th, 1767th, 1768th, 1769th, 1770th, 1771st, 1772nd, 1773rd, 1774th, 1775th, 1776th, 1777th, 1778th, 1779th, 1780th, 1781st, 1782nd, 1783rd, 1784th, 1785th, 1786th, 1787th, 1788th, 1789th, 1790th, 1791st, 1792nd, 1793rd, 1794th, 1795th, 1796th, 1797th, 1798th, 1799th, 1800th, 1801st, 1802nd, 1803rd, 1804th, 1805th, 1806th, 1807th, 1808th, 1809th, 1810th, 1811st, 1812nd, 1813rd, 1814th, 1815th, 1816th, 1817th, 1818th, 1819th, 1820th, 1



Figure 2 ASMA-Dan

Officer (RMO) together with approximately based Canadian Medical Technicians (CMTs) and vehicles. These provided Regiments Aid Pools (RAPs).

• **Medical Evacuation Vehicle (MEV)**

The MEV was based at Okeana. It was staffed by one Medical Officer (MO), one Dental Officer and 29 supporting medical staff mostly CMTs. Two Land Ambulances (initially were based at MEV together with one Land Rover. The ambulance had no communications equipment, the facility being provided by its accompanying Land Rover when required. MEV also had some storage facility and was the base of the Royal Air Force (RAF) Aeromedical Evacuation Cell. The MEV provided the safeguard medical facility throughout the exercise with the MO resident throughout. MEV regularly received to patient to every chain wherever a case was arrived on the exercise area.

• **Dressing Station (DS)**

This was mobile throughout the exercise. The forward moved right cases during the exercise period, the facility being based usually in tents. As used previously the staffing of the DS was drawn from the Close Support Medical Regiment and consisted of one Nursing Officer plus 30 other medical staff. There were no MOs but the Commanding

Officer of a Medical Squadron was re-located working with a RFAF detachment. Clearly on becoming the CO of the Medical Squadron was a Medical Officer, this is regarded a medical. The DS had one wheeled Land Ambulance (Fig 1) together with equipment and to Hqs that could be deployed on the scene of a major incident. The DS was from, received staff and did not provide any non-medical cover other than for major incident purposes.

• **Two Light helicopters**

The primary role of these aircraft was to conduct evacuation of injured patients to Wicks Polish Military Hospital.

• **RAF Polish Military Hospital Wicks.**

This was originally built during the Second World War as a Lateral Hospital and it situated approximately one hour from GPOs by road. It is built in the shape of a World War Two Hospital building with the word 'Block' representing the wings and the administration block representing the facilities. The hospital has 360 beds and provides most major specialties with the exception of neurosurgery, plastic, surgery and cardiovascular surgery. It has the following facilities:

- Helicopter Landing for receipt of occupying large medical including Canada.

DRAWSKO POMORSKI TRAINING AREA

■ DRAWSKO POMORSKI



Figure 1 Map of Drawsko Pomorski Training Area



Figure 4. Sikorsky UH-60 Black Hawk.

- Emergency Department serving approximately 50 patients per day. This department has a recovery room for victims of major trauma.
- Full laboratory services including blood investigations.
- Radiology and direct CT Scanning available 24 hours per day.
- Intensive Care Unit (ICU) with five ventilated beds.
- Full supporting services including physiotherapy, pharmacy etc.

While the hospital does not meet standards of emergency in training used listed in the UK, it is felt that the hospital provides an acceptable level of care. This was evidenced by the treatment received by several British servicemen over the previous period.

Injured personnel arriving by helicopter are transferred by Polish ambulance to the emergency department, arriving from fully fitted, grab bags, are available for staff meeting the helicopter.

Arriving patients are sent to the recovery room by an ICU ambulance, instead of secondary by a general support and an orthopaedic support. Full resuscitation facilities together with radiological and laboratory services are available within the emergency department.

Patients can be transferred from the emergency department directly to the operating theatre, to ICU or to general surgical or orthopaedic wards. There was no priority in both ICU or general during the previous period.

Patients requiring specialist care not provided at Wola (e.g. neurosurgery, thoracic surgery, plastic surgery) can be transferred by the Polish military services to their larger hospital in Holmskov. Alternatively, the patients can be able to transfer a commercial plane arrived at Wola.

It is noteworthy to note that other non-Polish units using DPMAs make use of the Polish Military Hospital at Wola. These units, include the USA, Germany, Belgium and Italy, representatives of which medical organisations have all made liaison visits to the facility.

During 1999 it was decided to have a direct medical branch (the Commonwealth Medical Helicopter) at Wola throughout the weekend to act as a direct link between the hospital and overseas combat and the BR2. This was replaced in 2000 and worked well. In addition, during 2000 a Polish helicopter was based at the hospital in Wola, to accompany the MCO. The MCO and helicopter was able to meet arriving British patients and carry out pain assessments on to the hospital ward and allowing staff the arrangements was successful.

By personal liaison the author visited the

and an hospital at Dzierżka Pomorska. This is a well equipped facility with three ICU beds. Other than a routine operating theatre block the facilities provided there were judged to be suitably adequate in those in Włocławek.

The only other Polish facility in the region is a Polish Army Medical Centre at Bydgoszcz (Gdynia). This centre provides hospital facilities but would possibly be utilised in future years to augment the facilities of the MBS in Gdynia.

• Anatomical Dissection Capability

Provision of an anatomical dissection facility in Germany or UK was possible. Liaison was by the RAF/Army medical community with the RAF Medical Reception Station in Gdynia.

The Casualty Evacuation (Liaison) Chain

The assets of the MBS could be further enhanced through the use of search and rescue during the mission. An additional option for the MBS provided the primary care for all incoming personnel. It was felt that the staffing of the MBS consisting of a lead MD supported by CMTs, should be supported by a second MD and at least two Registered General Nurses (RGNs). These latter professionals are proposed in the project

development of a primary care service that offers a ward facility.

How Were Injured Personnel Were Evacuated During The Exercise?

When an injury occurred the exercise control staff was notified. The MBS medical officer was immediately sent to the accident scene. By telephone if possible. A Royal Military Police vehicle and crew were also deployed to the scene. If necessary the medical officer was met at a Helicopter Landing Zone (HLZ) and transferred to the accident site by quacked vehicle or foot. Once the doctor reached the victim a decision was made about whether the patient needed to be transferred to the MBS or to the Polish Military Hospital in Włocławek. If transfer to Włocławek was required, this was accomplished by road or air with the MBS doctor and a Polish surgeon accompanying the patient.

DPTs also used of were identified Ambulance Exchange Points (AEPs) which are points where tracked vehicles can transfer patients into road vehicles for onward transfer. Each AEP is co-located with a HLZ.

Each road recovery vehicle the training was required to observe the procedure outlined above to prevent fatalities. The author



Figure 3. Loading of a patient into a military ambulance.

returned either enhanced and was also involved in several ad hoc projects. One such project was the transfer of the stores related to it.

In addition to moving to its depot, the MRS deploys one of its subsidiaries, and leaves to the real marshalling point in cases of all mobilisations and demobilisations.

The above arrangements were satisfactory for providing medical care to single injured patients. During the war, a requirement was identified for the provision of a plan to cope with mass casualty situations that would provide medical support to them. The plan was executed during the war, the outcome being that of a medical vehicle confining itself to a lorry. This mass casualty exercise generated twenty facilities and the plan proved well.

The Operational Casualty Evacuation (OCE) Chain

In the operational environment, medical care at the front line would be provided by regional assets including the RMOs, the representative CMTs and the Regional Aid Posts (RAPs). Care up to and including R&P care is detailed in Rule One card.

Casualties would then be evacuated back to Rule Two supported as far as the Armoured Division by the Diving Bathers, these may be supported by surgical teams in which case they are considered as Rule Two Plus. The diving teams aim to provide life and limb saving treatment and to prepare patients for further evacuation back along the medical chain.

As well as recovering the severely injured, Rule One and Two facilities aim to patch up the walking wounded and return them to the front line as soon as possible. To fulfil these functions, the medical personnel and nursing personnel require relevant training to meet a high quality, robust system. However, this single efforted the Diving Bathers in particular to meet a huge number of tasks up to and including the author was also able to assist in several training events. The opportunity never has yet to be fully utilised but the recommendations of King's General's working parties on Deployable Medical Modules are beginning to find their way to operational use.

Rule Three medical facilities are represented by Field Hospitals which have surgical, physiotherapy, anaesthetics, and radiology laboratory and radiology provision. Field Hospitals can carry out most life and limb

saving surgical procedures and can also provide standard ward-based medical care. A recent development is to locate Field Hospitals in the presence of an Agony and Emergency Department covering the functions of critical departments.

Rule Four Medical facilities are those not back from the front line, quite possibly located at the UK. Such facilities would provide all medical care, including operations not possible in the operational environment such as neurosurgery.

In the maritime context, Rule Three (a) Submarine Units in maritime environments medical facilities would be provided by vessels such as Primary Casualty Recovery Ships (a Royal Fleet Auxiliary ASCLC).

Summary

As stated at the beginning of the article, the author was the only Royal Officer present in contact with a handful of R&P personnel to several thousand Army colleagues. It is not the opportunity for critics of the general comment with the House Bathers will remain with the passage of time. Colleagues in secondary care are only too aware of its operational displacement that provide much opportunity in the future.

The author was made extremely welcome to all that he met, from senior officers to the new junior soldiers. Against might was joined with the workings of the French Army and every other was taken to experience all aspects of the culture.

On a lighter note, several strategic issues were addressed. Unsurprisingly Army discussion agreed on the debanking of the Royal Air Force with the latter service's last job, joining the Plus Air Arm. The land based colleagues would join the Army Air Corps. Besides, will be placed into that, at no point would the author consider any reduction in the RM's current or future role. In spite of great pressure from Army sources.

Many new Three-Letter Abbreviations (TLAs) were found by the author. For the first time, the of the acronym is needed to though the Army speaks a different language in the RM but one that the new words become familiar. One particular Army slang term that was most especially and has found its suitable place in my memory is 'No Duff', which is the Army equivalent of the Naval term 'No Good'.

As well as issues with other Service members,

and the exercise has developed links with Polish military medical facilities. The Polish was eager to learn, and we have to thank their knowledge of French phrases. Already several English speaking Polish officers have visited Royal Liverpool Hospital and further collaborative visits are planned.

Conclusions

The visit afforded a full assessment to be made of the medical facilities that exist to treat injured seafarers that occur during operations in the world's Polish merchant fleet. All facilities from the operational level, the maintenance and transport systems, the Medical Reception Station and the Polish Military Hospital at Wlaka were visited on several occasions. In addition, several members of the medical chain and several injured seafarers were seen.

A more lengthy plan was conceived and initiated during the visit that has not been explained previously.

Overall it was felt that the independent medical support to the exercise was satisfactory and in particular that the Polish Military Hospital at Wlaka stands constant to be used for the hospital care of British seafarers who require secondary care during exercises.

Several personnel training and equipment needs were highlighted during the visit, these are all being addressed.

The visit provided an excellent opportunity for developing new service links and it is the author's strong recommendation that other members of the Royal Naval Medical Service further these links.

Acknowledgements

The author wishes to thank Colonel Tim Parnagat, Commander (Medical) 1st (UK) Armoured Division, for his support, Lieutenant Colonel Andrew Mills, Major Stuart Campbell, Major Chris Day, Major Henry Upton and Captain David Cameron provided invaluable assistance as did Major Mariusz Proszewski of 807 Polish Military Hospital Wlaka.

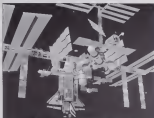


Figure 1. Space Station, the Seabrighter Series (1981)

space stations are subject to rotation which about constant positions relative to Earth. American communications are subject to weather conditions and polar region interference although this has been reduced with the introduction of GLOBAL Positioning Communications Systems (GPS/GPSAR).

Communications Systems (GPS/GPSAR) Systems also have experienced constraints on the use of communications in particular UHF used for satellite communications. Radio communications is restricted to using frequency LFM (low frequency) limited satellite communication is possible with the use of frequency Communications (low) with time delays. The lack of constant land based radio between maintains the presence of a 540 network.

Capacity Expansion

Expand permanent network systems and devices will cover. Early identification may permit determination and allow early preparation in the event of a crisis. The ability to recover a patient depends on a number of factors.

Operational situation

Operational and potential for development

Supplementary equipment available in terms

Facilities to assist in a situation (by one method)

Facilities to assist a situation (by one method)

Facilities to assist a situation (by one method)

Facilities to assist a situation (by one method)

Facilities to assist a situation (by one method)

Facilities to assist a situation (by one method)

Facilities to assist a situation (by one method)

Facilities to assist a situation (by one method)

Facilities to assist a situation (by one method)

Facilities to assist a situation (by one method)

Facilities to assist a situation (by one method)

Facilities to assist a situation (by one method)

Facilities to assist a situation (by one method)

Presence of lifeboat/space apparatus
Availability of medical recovery services on the surface or landing site
Availability of medical support services
Number and severity of casualties

Both submersible and space systems rely on air purification equipment to maintain a viable atmosphere. These systems will usually be supplemented by a continuous, 24/24 scrub in a low initial density. Current and proposed systems for the crew processing the airlock until into a hazardous environment are very similar.

Individual escape equipment like Mk10 Submersible Escape Breathing Set (SEBS) has been designed for submersibles. Two officers submersible within a specific depth of water to escape the SEBS/10 and survive in the absence of recovery layers. A similar suit for use within a submarine has been proposed for the use of astronauts escaping a stricken space vehicle or station. It includes a life support pressure suit with a limited life support system. Both systems also have designated recovery layers. NATO has an agreement between members to provide assistance to disabled submersibles (DPM2.26). The UK has the Submersible Rescue Assistance Group based on the former HMS DOL/1024 as well as the prototype to accommodate a surface vessel for use in the Europe Coast Ship with casualty recovery areas and decompression chambers. When the safe depth for submersible escape has been exceeded on there is, now for a controlled emergency, rescue submersibles are the optimal mode of escape. These include the UK L23 and the US Deep Submergence Rescue Vehicle (DSRVs). The submersible may require a critical submersible to act as a mother submersible (DPM2.10). Manned class 1500s have the ability to assume this role.

When the ISS goes online, the space shuttle will not be permanently docked and a medical treatment or lifeboat system (Crew Return Vehicle) will be required. A Russian Soyuz capsule will initially be docked permanently with the station. Eventually the capsule will be replaced with the specially designed Z-19 Crew Return Vehicle. This vehicle has a one man capsule and uses a lifting body design with a parachute. However the light profile of both lifeboats will have significant effects on any emergency recovery. The displacement of additional medical resources in the water may be an alternative option. The submersible supports outside the operation of the DPM2.10 Medical Triage Team while the space station would rely

on the launch of a Space Shuttle with personnel and supplies onboard.

Both submersible and those in the Atlantic also have one more most available and fast International Cooperation. There are seven documented events where submersible state substantially on both vessels have rendered assistance to the other. This has included a low density evacuation of a casualty with a submersible lifeboat/space apparatus the Atlantic to the north-eastern of a Russian submersible off British waters. The value of the International Space Station requires extensive planning for effective global recovery in emergencies.

Research

One of 158 primary missions in the preparation for manned missions to Mars. This part includes a physical prediction of its various systems for the monitoring of the effects of long term space flight. The preparation for the US and Mars missions means that NASA has to have its own research program.

Considering the effects of space travel include research into the effects of low gravity on various metabolism and bone function, and the monitoring of the biological effect of various exposure, as well as considering those damage effects, possibly with the use of direct measurements.

While much of the research conducted in the space program is related to the space program there are a number of 'spin off' products from medical applications. The submersibles or electronic medical equipment and portable technology portable CT and MRI imaging were product of earlier military technology and communication technology have also given rise to applications such as submersibles.

Summary

Space missions, although more remote are unique in terms of their environment and logistical requirements. The number of man-made space-based systems relatively small and planning will require an comprehensive, multi-disciplinary resources including submersible operations, astronautics, and technology to be developed later provided more information about isolated environments because of the number of personnel per hour. Space medicine has traditionally been an extension of routine medicine with high pressures involved in the

commence from Earth to orbit and eventually reach a final destination (returned from the last place visited). As the length of a mission increases, and the space habitats where crew live and operate expands, the environment becomes more complex, with today's medical attention. As well as the air purification systems, underwater is a significant hazard and even pressurized oxygen tanks. Many reasons requiring the provision of health support monitoring advice and countermeasures will undoubtedly in the submarine health transition. The specialty space medicine will support in a specialty in its own right, pushing further from other specialties such as aviation, medicine, emergency and occupational medicine along human exploration beyond the confines of land and sea.

References

1. *Aviation, Medical Care*. <http://www.medsys.gov/med/medical.html>.
2. Adams DL. The medical management of under-approaches in a deep-sea environment: a retrospective case review. *Int J Sub Mar Med* 1990; 18(4): 129-1.
3. Brown DC. Submarine rescue and recovery: a study in Royal Navy. *Aviation, Med* 1984; 55: 549.
4. Jennings RT. *Survival, Transportation Space Medicine*. New York: 1988. 9402.

Recommended Reading

Stanton J. *Health Indicators - Lessons from Polar and Space Exploration*. Annapolis: Naval Institute Press 1996.

Operation Medicine Fleet First

R D Carr OMB

Some of you will have heard of the Fleet Surgeon-General currently being worked up by Commander in Chief Fleet. I will endeavour to give you a brief overview before describing how I believe it will affect the Royal Naval Medical Service.

For the last six years, the Fleet has been structured around a 4-star Admiral, with his Headquarters staff based at Northwood. He has a Deputy Commander Fleet (Admiral) based in UK-P and six Type Commanders, JAGM, JFSG, FOST, CGM, COMBFA & COMNA, who recently replaced the old FOMA.

Despite FOMA, JFSG and COMNA, there were significant gaps in the staff and the structure. Although over 1000 people were employed when running the Fleet, this structure was considered overly top heavy now that the Fleet has reduced to 12 Frigates & Destroyers and average of 2000 a year are assigned to the sea, structure has been questioned.

The Commander in Chief will remain at Northwood with his P1 or "Operational" staff. He will concentrate, increasingly on his JAGO responsibilities, as CIRCUS/ATLANT and COMNAVSEC and his general staff will continue to grow from the recently expanded Atlantic. Including therefore the command will go to "The Waterhouse" where currently Fleetcom, rather than the Naval Base or at sea reconnaissance or White House. A new Deputy JAGC will be established at 27 and the Type Commanders will be replaced with Chief of Staff for Operations, Warship Planning and Sustainability.

Much detail has still to be worked out, but there is a significant opportunity to study the separate Naval Medical Headquarters, MEDCOM, will remain as Second Sea Lord's Top Level Budget but will assume responsibility for the provision of all medical support to both the FLEET and shore establishments. The present

post of Assistant Chief of Staff (Medical as Deputy will be ended) and post MEDCOM's role with responsibility for all operational medical issues. Until now reconnaissance is possible but his staff will remain at Northwood. However, over the improved structure it will be in 2002 he will move his staff and will alongside the new Chief of Staff (Support) in Portsmouth Health Office will be responsible with the Operational staff but will be a part of MEDCOM's Headquarters. There will be major opportunities to maintain the present medical deployment of effort where by policy issues or medical issues and frequently into or from officers end up attending the same meeting!

JAGM will remain unchanged and MOR, will remain responsible for MEDCOM for training at sea. The new structure will consist of six 27 Surgeon Base Admiral having command over 2 Surgeon Commanders who will have similar responsibilities to those at present. Efforts savings can be made and that should enable the Headquarters to look increasingly at Clinical Governance and standards in addition to its traditional delivery of health care.

I welcome this opportunity to acknowledge the new Medical Staff which I believe will allow MEDCOM to play CRUCIAL the Royal Naval Medical Service.

Regent Commander Carr is currently Assistant Chief of Staff (Medical) & Deputy Commander in Chief Fleet.

References

- 1 Instructions for Medical Officers of the Royal Navy Serving Aboard Vessels from the Queen's Regulations and Admiralty Instructions for His Majesty's Service, 5 May 1884 (p11)
- 2 Report of the Committee Appointed by the Lords Commissioners of the Admiralty to Enquire into the Causes of the Outbreak of Scour on the vessel *Arcturion*, the Admiralty of the Princess 'Wald' by the Admiralty in the Way of Food, Medicine, and Medical Facilities, etc. 1877 London (H4763) K - 1521
- 3 Regulations and Instructions for the Medical Officers of His Majesty's Fleet: 1884 (H4763) (p11) of Commission for Enquiring into the Cause of Scour Aboard of the British Ship *Arcturion* in October 1876 by the Admiralty of the Princess 'Wald' by the Admiralty in the Way of Food, Medicine, and Medical Facilities, etc. 1877 London (H4763) K - 1521
- 4 D Forbes & A B Corbett Elements of Marine Medicine and Therapeutics, 1888 London Taylor and Francis 210
- 5 J Evans, Secretary of Surgeon 1907 Southampton, 30



Figure 1: Medicine Store from the *Arcturion* (H4763)

Table A--Continued				
Country, No.	No. of Cases, 1970-79	No. of Cases, 1980-89	No. of Cases, 1990-99	No. of Cases, 2000-09
India, South	10	10	10	10
Iran	10	10	10	10
Israel	10	10	10	10
Italy	10	10	10	10
Japan	10	10	10	10
Jordan	10	10	10	10
Kazakhstan	10	10	10	10
Korea, North	10	10	10	10
Korea, South	10	10	10	10
Kuwait	10	10	10	10
Latvia	10	10	10	10
Lebanon	10	10	10	10
Libya	10	10	10	10
Lithuania	10	10	10	10
Madagascar	10	10	10	10
Malaysia	10	10	10	10
Mali	10	10	10	10
Moldova	10	10	10	10
Mongolia	10	10	10	10
Morocco	10	10	10	10
Mozambique	10	10	10	10
Nepal	10	10	10	10
Netherlands	10	10	10	10
Nicaragua	10	10	10	10
Niger	10	10	10	10
Nigeria	10	10	10	10
North Macedonia	10	10	10	10
Oman	10	10	10	10
Pakistan	10	10	10	10
Panama	10	10	10	10
Papua New Guinea	10	10	10	10
Paraguay	10	10	10	10
Peru	10	10	10	10
Philippines	10	10	10	10
Poland	10	10	10	10
Portugal	10	10	10	10
Romania	10	10	10	10
Russia	10	10	10	10
Saudi Arabia	10	10	10	10
Senegal	10	10	10	10
Serbia	10	10	10	10
Seychelles	10	10	10	10
Slovakia	10	10	10	10
Slovenia	10	10	10	10
South Africa	10	10	10	10
South Korea	10	10	10	10
Spain	10	10	10	10
Sweden	10	10	10	10
Switzerland	10	10	10	10
Taiwan	10	10	10	10
Tanzania	10	10	10	10
Thailand	10	10	10	10
Togo	10	10	10	10
Tonga	10	10	10	10
Trinidad and Tobago	10	10	10	10
Tunisia	10	10	10	10
Turkey	10	10	10	10
Ukraine	10	10	10	10
United Kingdom	10	10	10	10
United States	10	10	10	10
Uruguay	10	10	10	10
Uzbekistan	10	10	10	10
Venezuela	10	10	10	10
Vietnam	10	10	10	10
Yemen	10	10	10	10
Zambia	10	10	10	10
Zimbabwe	10	10	10	10

Figure 2. Effect of Gender of subject and Age of the Subject on the...

Fishes	Lindbeck, May		No. Specimens
	East pass	W. (round)	
1st round		W.	20
2nd round		For Phosporal (West)	4
3rd round		For Phosporal (West)	
May 1		For Green	5
May 2		Dark Blue	—
May 3		For Green	5
May 4		Dark Blue	5
May 5		For Green	1
May 6		Dark Blue	5
May 7		For Green	4
May 8		Dark Blue	10
May 9		For Green	—
May 10		Dark Blue	—
May 11		For Green	1
May 12		For Green	2
May 13		For Green	—
May 14		Dark Blue	1
May 15		For Green	5
May 16		Dark Blue	—
May 17		For Green	4
May 18		Dark Blue	2
May 19		For Green	4
May 20		Dark Blue	1
May 21		For Green	—
May 22		Dark Blue	—
May 23		For Green	2
May 24		Dark Blue	—
May 25		For Green	1
May 26		Dark Blue	1
May 27		For Green	1
May 28		For Green	1
May 29		For Green	1
May 30		For Green	1
May 31		For Green	1
Common Fish			28
White Sea	May 1		—
	May 2		—
	May 3		1
	May 4		—
	May 5		1
	May 6		1

Figure 3. Dogger's Gardens 1977 Medical Brown Trout

Adventure and Travel

The British Services Kangchenjunga Expedition 2000

Commander S K Jackson FRCS



There is no doubt that those who first climb Kangchenjunga will achieve the greatest feat in mountaineering, for it is a mountain which combines in its demand not only the severe conditions of wind, weather and very high altitude but technical problems, and objective dangers even higher than those we encountered in Everest. John Hunt, leader of the 1953 Everest expedition.

Introduction

The British Services Kangchenjunga Expedition 1999 comprised two groups of climbers who left to climb the Nepal in the end of March 2000 to reach Mt. Kangchenjunga (8 586 metres) 28 660 feet, the third highest mountain in the world and Kanchung Peak (8 790 metres) 22 900 feet which is situated on the north side of Kangchenjunga.

Kangchenjunga - History

Kangchenjunga is rarely climbed due to its remote location and the fact that it has no easy access at all as there being objectively dangerous and hazardous long and hard. After the first ascent of Kangchenjunga in 1953 by a French team via the South West Face it was 22 years before the 2nd ascent by an Indian army expedition in 1977 via the east spur of the North ridge and a further two years before Hong Kong and young made the third ascent in 1979 from the North side of the mountain. Since 1945 several attempts have been made of the more easterly of Kangchenjunga, mostly from the North. This was a job with severe rates in 82 and for the first time on Everest.

Kanchung - History

S. Schoeder and the British Frank S. Hughes first climbed Kanchung in 1980. It has not officially been climbed since. It represented a

challenging but achievable objective for the Junior team.

The Main (Kangchenjunga) Team

The 14 strong Main Team was led by Lieutenant Commander Martin Ashburn, a 46 year old Medical Services Officer with Surgeon Lieutenant Andrew Hughes as Deputy Leader plus five Royal Marines, four Soldiers and three members of the Royal Air Force.

The Junior (Kanchung) Team

At the same time a second team, the Junior Team of 11 young Surgeons and 1 surgeon was led by Major Andy Pangerson (199) a Royal Surgeon and included as a reserve Royal Marine Surgeon David McLeod. This was to be the first experience of the Himalayas for most of these young people. From whom it is hoped, will come the next generation of Service Himalayan climbers and leaders.

The Approach to the Mountains

Both teams flew to Kathmandu on 27th March 2000 and then on to Solukhi in the remote East of Nepal from where the long walk-in to their respective Base Camps would start. After two weeks of walking through the forested and remote mountain scenery of North-Eastern Nepal the teams reached the Tibetan Chinese village they expected to go their respective ways. The main team faced a headily cold, it became known as the 'house of the dead' to their Base Camp in Pado (1 600 metres) and the junior team a further week of walking to the Magpa La and Chinese to their Base Camp in Pangpang. The walk was not only less enjoyable but tested the physiological powers of acclimatisation to high altitude and also improved fitness and further developed team bonding.

The Junior Team on Kanchung

The junior team were the only scrappers of Pangpang for the three weeks or so that they

Commander S K Jackson is the Officer Commanding Support Unit at MDARS Darnley

went there. From Pangpang they headed south along the Knapelungpa Glacier towards the North West face of Knapelungpa in low clouds they established a camp. They then turned West and established a camp at a height of about 4000m below the south face of Knapang. From this a camp they climbed up to the third Ridge and intended to follow it to the summit. They failed by a whisker after having struggled in difficult weather by land they set deep snow and deteriorating weather conditions and in the end they ran out of time.

The Main Route on Knapelungpa

Because of its position at the extreme East of the Himalayas, Knapelungpa experiences intense weather, which includes extreme high winds and heavy snowfall. As the mountains approached it is pelted by high pressure dust storms which were



over the mountain by the middle of May. The prospects in length of weeks of settled weather during which an attempt to reach the summit can be made. The expedition would need to be at a position to launch a summit bid when the first weather window opened. We arrived at Base Camp on 11th April after a desperately hard day's work along the glacier from Olang and where we set for the first time our first Stouffer. Unfortunately there were other expeditions on the mountain - a US & Korean Team a large Indian British Indian Police expedition from British Guides and eventually also British, Russian &

German high altitude mountaineers. The Koreans had arrived 18 days ahead of us and had established the route to Camp 1 on the top of the first ridge at 4200m. Using their fixed rope we went on a bit of time and effort in getting to Camp 1 established. We got Camp 2 established at about 4700m very soon afterwards despite persistent heavy snowfall. The weather certainly lived up to its reputation for its weather and it rained most afternoons and I was not to get two decent days consecutively. Despite the weather and the loss of the forecast due to a confusion that resulted in having to evacuate him from the mountain a helicopter which was to send him to get through the main route in large clouds. Camp 1 proved more difficult to establish as the weather was particularly bad with a lot of high wind the main sleeping in Camp 2 almost impossible as the ground was very rough but eventually it was established the camp at about 4700m on the side of the 'great cliff'. However the lack of sleep and constant freezing through deep snow was sapping the strength of the team. We were now the front of all the expeditions on the mountain as the Koreans were stopped on their route & the death of their leader after he was hit by falling ice. On 11th May the weather was anything even worse and then David and the Weather decided to return to Base Camp leaving John Doyle, Andy Cole, Peter George and Peter Norrie at Camp 3. On 12th the weather improved a bit and during the day John and I moved up to Camp 4 (1600ft) when they ended and prepared for a summit bid the next day. They left Camp 4 at 4000 where I saw Camp 3 from the South was heavily pelted on the eastern (left) and was almost impossible to keep good track to the summit team. The day had dawned crystal clear, very cold and with virtually no wind, ideal summit day conditions. However there was still a great deal of deep soft snow on the mountain that would make the going very tough for anyone there. With the exception of Alan Peckers we were the only expedition on the mountain as the remainder had returned on the face of the weather conditions.

Andy Hughes reported on at 4000 that he was about to move up to Camp 3 to set an 'icefalling' for the summit team and that he could see John's team making good progress and that there were about halfway up the Gungway. At 4400 John and I became visible from Base Camp and the rest of the team gathered to watch their slow but

careless, spaced program. All of the other expeditions also believed that there was a certain isolation and the Base Camp area was used only with people watching the progress of their climbs and the Koreans worked out their routes alone who succeeded the summit. The Chinese also pushed climbers back up the hill a day after they planned to take advantage of the cold, we were putting on the coats of my Igloo spaced working loads on their backs looking out up to Camp 1. By 2000 the time had reached the top of the "Gangang" and turned



light towards the west. A little while later they asked Base Camp to report that they had reached an altitude of 1250 meters and had been walking through some deep snow for most of the trip and that they could see that there was a lot more to come. They were very tired and were about to start descending back down the mountain. However after a couple of minutes they had a rethink and decided to give it another hour and a half and off they went again.

By 1200 they had made excellent progress and were on the summit ridge and in 1400 we observed the wall we had been waiting for from John Dwyer Base Camp this is Kangshangang Summit. The Indians and Koreans were whooping with delight and the Swiss refused to give us their congratulations. Not to be left out Andy Hughes called from Camp 3. The whole mountain seemed to be alive with people cheering, the few Swiss British we celebrated with a cup of tea.

This was the first ascent of Kangshangang of any other 8000 meter peak this year I had therefore the millennium and the first of Kangshangang since spring 1999. We were the first British

expedition to summit on Kangshangang via the South West Face since the first ascent on 21st May 1955 by George Band and Joe Brown. The summit was achieved without oxygen and without fixed ropes from the Gangway. John and Andy are the first British Sherpas to climb Kangshangang since Tony and Peter in 1976 May 1999 and (see above) for the 19th and 21st British to summit on the mountain by any route. John Doyle is the only British Sherpa to have climbed two 8000 meter peaks, and Andy is the first serving Royal Marine to climb one of the 8000 meter peaks. Andy Dale had replaced the un-surveyed Dune Bunting on the first summit team and stay in the first installation of Kangshangang who was his place because he



A wide view of the mountain which had a slight gap over it.

Over the next few days the altitude of the team moved up to Camp 4 to try and follow it then because but unfortunately the weather window closed and deep snow and high winds delayed all. The Koreans and Indians managed to put one member each on the summit, using oxygen but the other expedition failed.

Conclusion

Summit came on Kangshangang because the team consisted of trained and experienced mountaineers who worked extremely hard for each other on the mountain. The Sherpas were a great help with load carrying and left us in no doubt on the task of getting the team to and we were in the right place at the right time when the weather window opened. For me personally it was an enormous privilege to have been allowed to lead the expedition.

Adventure and Travel

Helicopter Medical Retrieval in Sydney, New South Wales

A J Moller

Introduction

There are two universal services in Sydney called with dispatch and ambulance parameters. These organisations provide a transfer service between district hospitals and tertiary referral centres and rapid response to remote areas or to pick up an ambulance parameter. 'Carflight' operates a helicopter and road ambulance covering western Sydney and is based at Macquarie Hospital whilst Sydney Ambulance (Sydney Service (SARS)) operates out of Prince Henry Hospital on the east of the city.

Sydney has a large number of small district hospitals and approximately 12 teaching hospitals. The latter provide support for the district hospitals for facilities, such as intensive therapy, cardiac surgery and tertiary services etc. Outside Sydney the population concentration drops dramatically and country hospitals provide care. These centres are limited in staff and resources and often critically ill and remote requiring specialist care to the major cities. New South Wales covers a vast area and rapid transport of these patients requires the use of both rotary and fixed wing ambulances.

This introduction is a general overview of the New South Wales universal services and highlights the involvement in working for 'Carflight' from January to July 1986.

Carflight

Carflight is a non-profit making company funded in part from State government and part by charitable work. It employs doctors as part of its medical staff and the NSW Medical Research Institute. Both doctors and specialists are employed. The group of 15 doctors includes 4 full time specialists. The organisation has connections from the colleges of Veterinary, Civil, Agricultural and Forestry Medicine for the regional personnel. An ambulance parameter is always available. Funded by NSW Ambulance

There is a threat for a pilot and crewman for helicopter operators and two paramedics. Doctor teams ensuring that the helicopter is always manned for its intended response.

The Job

Working for Carflight is provided via the Medical Research Unit (MRU), an administrative centre coordinating workloads and rostering personnel for both Carflight and SARS. Approximately 40% of jobs are by road and most others by helicopter with occasional fixed wing transfers. SARS performs most fixed wing transfers. Paramedics find a primary response to an incident or request through MRU at the request of the ambulance crew, on the basis of ambulance coordination centre. The helicopter is more likely to be used for minor vehicle accidents (MVA) or serious trauma incidents with minor or spinal injuries. The helicopter is equipped with a stretch and not infrequently is requested for trauma and minor operations especially in the Blue Mountains. Frequently there is one primary every second day and a total of 12 missions are performed in an average month. Obviously the nature of the job is that the medical is very variable and individual managers to carry out 16 road jobs before the first helicopter mission.

Training takes the first two weeks of a new recruit job. This is comprehensive and includes emergency and helicopter operating procedures, crash landing and aeromedical training. The sector is a compressed effort due to the number of paramedic doctors. As an example there are two day doctors (1 day and second day) from 0800 to 1800 both first and second day as from 1800 to 0600 the second day can be at home but work to be on the base if available. For helicopter paramedics should the first or have off a road transfer. The average work is about 48 hours but this varies from 28 and work to 76 the first. Four days per month are spent at district hospital or theatre. RCU is emergency

Dr A J Moller is a General Practitioner based in a General Practice in Southwestern Queensland.

	Ventilated		Non Ventilated	
	Primary	Secondary	Primary	Secondary
Head	1	20	0	3
Underpart	1	20	0	0
Other	0	2	0	1

Table 1 Aerial Evacurees: Numbers are number of patients transported. Primary is a case requiring ventilation on transport; secondary Others include patients where a duplicate of status exists in this field in both helicopter and road or fixed wing evacuees

The Transport

The *Brady*. All transfers are performed with a standard *AgustaWestland* *Boinco* pack and bridge. The *Boinco* pack consists of a variable range of equipment to deal with most eventuations and a good selection of drugs. The bridge is a custom designed piece of equipment that fits over the patient's feet and secures it to the aircraft equipment on the bridge consists of an oxygen cylinder with disconnect valve, oxygen and suction. Prepay monitor, capnograph and two oxygen devices.

Acad - *Chinook* has a dedicated road ambulance a fixed transfer can also be used to meet the needs of the organisation. It is worth noting that neither the road ambulance nor the helicopters have fixed medical equipment (as available on a standard ambulance does covering *Brady*).

Helicopter. A Bell 412 helicopter is operated from the *Weymouth* helipad this is a large helicopter and has the capability to transport three patients without minor reconfiguration. It is also equipped with a stretch. The range is about three hours flying at around 140 aerial miles without refuelling. Jobs involving over two hours flight each way are rare, in practice.

Fixed Wing. Weather dictates or the need to evacuate the patient may dictate the need for a fixed wing transfer. The air ambulance service operates a fleet of three King Air aircraft.

The choice of which mode of transport to use depends upon several variables such as urgency, distance or weather. With bad weather over the *Blue Mountains* driving times in excess of 40 minutes to reach *Excothorpe* or *Lathbury* are not uncommon. The helicopter can be used and airborne within 10 minutes whereas organising a fixed wing transfer takes considerably longer.

The bridge and stretcher set up allows

flexibility without relying on fixed equipment. A top mode of transport in this way's patient is rarely too injured by ambulance on helicopter for different legs of the trip within the need to reconfigure the equipment.

Chinook also undertakes some international transfers using *Langley* or *Forbury* aircraft. This is a commercial venture that helps fund the organisation. Performance in international transfer is usually satisfactory.

My Experience

I participated fully in the first year for 1 weeks of the six months I spent with *Chinook*. I was involved in the transport of 32 patients (Table 1). The team takes the main jobs from between 1 and 19 hours and the ages of its patients from 12 to 95 years. For comparison during a six month period the Royal Air Force *Stromboli* Cell would expect to transfer 1 patients requiring non-invasive resuscitation.

In general the most difficult decision was whether a patient could safely be transferred without the need to intubate. This was especially apparent with *Schizophrenia* transfers as flying over the *Blue Mountains* required a minimum altitude of about 5000 ft thus reducing ambient pressure and hence oxygen carrying power patients.

Summary

Undoubtedly the most arduous of the job is the nature of most knowing what will happen with Primary protocols so in *WMA* allows one to experience the atmosphere and deal with clinical situations as in direct setting. The transfer is comprehensive and has taught me where to be trapped to critical in *paradoxical*, *bragging*, *point* into a *major*, *team*. The team is not in *macroscopic* transfer where *lost* and *displaced*.

can be tested as well as clinical skills. On the negative side the unpredictability can be difficult financially as primary or 17500 means you will be at home two hours later home) and there can be long and dull days when nothing happens. A lot of time is spent transporting post-acute patients from one hospital to another to find an ICU bed.

It certainly makes it is difficult to envisage a future conflict when severely injured casualties would not require transport both locally and over long distances. This job provides an ideal opportunity to become involved with transporting critically ill patients.



1. The "Frog" and crew often are unable to load the Bell 412 helicopter



2. "Laughlin One" loading at the "Barnes of Sydney"



3. "Laughlin One" on the ground at the airport



4. Helicopter is not left in on the "Barnes of Sydney"

Book Reviews

Bladder's Diseases: 13th Comprehensive, 9th edition
Edited by Peter J. Roach, Peter H. Abate, Tar
Cheng, Ann Ann Kirkwood and J. Margaret
Harrington, Oxford University Press Inc. ISBN 0-8
520-87796-5

I have always regarded Roach's as belonging to the close group of classical medical texts which like Parry and Lewis's Short Practice of Surgery are forever associated with the origins of their specialty. These books are not only a joy to read, although they are often delightfully quaint in parts, they also contain many interesting footnotes that place the subject in an historical context. However, the discounting reader is frequently left, feeling that this up to date and detailed, expert, text is in fact dated (what?

The editors have cleverly done much to change the latter viewpoint while preserving the book's qualities. It has been extensively re-written with a significant increase in size - 200 more pages in a larger format and another two size. The text is divided into 11 sections (previously 9 parts) with 44 chapters (previously 33) including several colour plates. The change is apparent from what we now frequently see: traditional internal diseases in subject areas which are more relevant to modern working practices is aided by the inclusion of chapters on mental health, skin work, diagnosis, imaging, chronic infection, infection and diseases of the urinary system, liver and blood. There is also a new chapter on urology, haematology and coagulation (written entirely by Stephen Cummings D.H.O. M.D.). This is not the only contribution from authors linked to the Royal Army Medical Service.

The stated editorial aim of the book is 'to present in a well chosen order as up to date and comprehensive coverage of occupational diseases as they present in today's industrialized society'. I believe that they have succeeded in achieving the ambition I have used the book to refer on several occasions in my practice and have found it to be clear, authoritative, comprehensive and well referenced.

The book should be both essential reading and a readily available source of reference to all practising occupational physicians. The specialty

has lacked a 'one stop' available reference source of information and for those studying in the Faculty examinations and this book admirably fills that gap.

The 9th Edition of Roach's is wholeheartedly recommended with the only reservation the review editors on information technology coupled with the expenditure of time of acquiring a medical knowledge will make, as many believe, the kind of reference book obsolete in the very near future. Although I do not expect most of us currently using the medical experience is happening through books like these, they will survive.

Stephen Cummings D.H.O. M.D. Principal Medical Officer
25th Royal Armoured Corps

The Steps of Combat - The Combat of Steps
by Roy Frank (Alpha Press) ISBN 085741 27
£14.95 plus free from the author at 15, Gresham
Avenue, Poole, Dorset BH12 4DP

Roy Frank was a Welfare Officer of the 16
Service Mental Hospital, London, when this was
written and referred to his own personal loss
of three comrades and the lieutenant Mary
Primarily the involved looking and morning
war scenes depicted, in difficult times,
wounded men who were suffering from a wide
range of battle stress, debility, war
experiences and other mental conditions. His
major intent was to make clear they were
suffering full conditions in War (Schubert,
Fitzroy, what from the and process of memory and
proper care).

His book, therefore, many of the combat scenes
and related events he reported which arose from
both world wars and more recent conflicts and
happened to be the impact of the horrors
and how these victims could not have helped
after their service of on the battlefield. What
stands out clearly is the overall depression that a
large percentage endured and the effects
evidence from numerous sources many suffered
in a kind of their stress in addition to the

disgrace legacy borne by these families. Even so, those who suffered prejudice in the mid-sixties in 12 short stories and forms the narrative represents that for the majority American was to very few that could be achieved and the literary was inevitably short-lived. He highlights the lack of resources to deal with such cases in a negative clinical and welfare focus, and from the therapeutic vision to a clinical call, in the form of drug therapy. How himself this book that in trying to fill the specific and responsible speech the surface of the personal system and related the clinical with his clients are inevitably welcomed with his sympathy as the overall impact he could have on patients. His curriculum, and published curriculum, read with feelings of emotion.

Overall will say, not with professionals employed in the health and welfare field.

The story of Hope's work, undoubtedly brought from this context with a large number of remarkable cases and especially his book, reads to point a picture of very few lasting survivors in the corporate effort to rehabilitate. The responses passed on that at the end, the best to be achieved was to lose them slowly.

Overall I found the book an interesting, and worthwhile read, however I believe a better long chapter giving recommendations for change could have strengthened it.

Colin G. H. H. H. H.
Newcastle University Business School, Newcastle

Obituaries

Sergeant Lieutenant Commander (R) J R (Jack) Stuart Whyte

Jack Whyte died on 13 October 2008, well over his 94th year. He was born in Glasgow, New Zealand, coming to England in 1901. He qualified at Leeds University Dental School in 1923 and spent his practice in Halifax, Leeds. As the outbreak of war loomed the RNFVR and other service dental appointments, including Royal Engineers (RECON) and HMS CIRCUS, he was appointed to HMS FORTHOLK, then on European convoy escort duties. Of this latter period it is mentioned on retirement issued on Home One Day (the day he had somehow managed not to die) that he had somehow managed not to die during allegedly 11 underwater walks toward the base of a small boat, which he eventually published. He was a keen member of the FORTHOLK Association and a regular attendee at the reunions until no longer able to make the journey to Plymouth. He actually died on the day of their Anniversary. Whyte on board he also contributed a scale model of the ship, which now resides in Plymouth Naval Base Museum.

In 1943 he was appointed to HMS ADMIRAL with a Dental Laboratory, in order to provide denture work for the Fleet. (How many have changed? DSW) This took him to the Far East until the surrender of Japan. He was then able to take some leave in New Zealand and work up with his many relatives there, eventually returning home to HMS FORTHOLK.

Returning to General Practice in Leeds, he was very involved with the local Dental Committee in the early days of the NHS, the local Dental Association, Rotary and the Red Cross Association.

He had a life-long interest in motorway running over the years a variety of triage, Nissan and Lotus cars and motor cycles, with which he regularly competed.

His wife Mary sadly pre-deceased him by 11 years. He leaves a son, David, two daughters and his late wife's sister-Pat who was a great comfort to him particularly in his last years when he was increasingly disabled with problems of mobility.

D S Whyte

Sergeant Captain R M F (Paul) Royal Navy

This obituary is adapted from the address given at Captain Paul's memorial service on 5 June 2008.

Rossie Paul came from a distinguished Edinburgh family. His father was a Barrister-at-Law at Queen's Barristers, School and his mother was a pianist of Edinburgh.

On leaving school Rossie went to Edinburgh University to read medicine. During his time there he became Scottish Universities Football Champion and a consistent bridge player. He also qualified as a physician in 1952 joining the Royal Navy the following year as RM FORTHOLK.

His first ship was HMS PELICAN based at Portsmouth. He often spoke fondly of his time on South Africa. Subsequently appointed to RM FORTHOLK he witnessed the most fearful work on the front of the hydrogen bomb tests. He had to photograph taken standing in the bomb crater's shadow for the which he has shown to me.

Following this Rossie qualified as a submaster in 1959 and along with the late Surgeon Vice Admiral Roger Lambert, became one of the pioneers of military medicine. They together moved to Germany, Cumberland and served on the USS NAUTILUS, the world's first nuclear submarine. On his return from America he undertook a long series of courses and training to heighten his qualifications for the Royal Navy Submarine, including the MSc in Radiobiology. During this time he produced the cylinder and training performance standards for submarine radiobiology. It hardly changed since he served as RM Submaster FORTHOLK before taking on a series of staff jobs in support of the Submarine Service until 1987 when he became the Head of the Naval Radiological Protection Service.

I first met Rossie Paul when he was in Berlin at the Nuclear Medicine Department. I was soon made aware of his personality, integrity and the most of the people in this unusual service. I was deeply saddened by it. It was so far from where Rossie was born in his last light surrounded by his family and friends, especially proud of his children, the house and the pond full of eels.

He was a magnificent gardener. I don't think I ever bought a vegetable and his delight in watering and planting and potting in almost anything was an eternal ritual. Robert had never an eyelid or politician, whilst a medical doctor.

He was a considerable fisherman with a real sea for River Tame where he had hoped to spend many hours during his retirement, only now with hindsight that there is a photograph as proof of his hobby where for nearly 10 winters we have known on the River. However the smallest of catch was 7 pounds. The photograph now hangs in the dining room, the biggest fish in the photograph was Robert's uncle, the had been given the opportunity to fish there by the Captain J HARRIS VOLCAN who had been called to a meeting. On the next morning the Captain asked him to catch another.

In the end The Honour went through a difficult time and was appointed to HMS BLETBY. He brought back was returned and went back to infirmaries where he was in his last. Now moved to Anglia for completed his last duty with the birth of Richard but about permanently based in Portsmouth and came in Portsmouth he could spend spend his time in a wide world and the old days were remembered.

Robert's final appointment was as Medical Officer in Charge of the Institute of Mental Medicine. His aim was to bring a smile to the face of a desperate and important establishment and this he did.

When he talks of his prodigious social grace, all before we all know how much we can acknowledge that he was a true friend. He could be unworldly and unforgiving of evil or unworldly and he could be very early in fact a true friend. But my obituary memory of Robert is encapsulated in another photograph which was taken and is to be enjoyed. In it he, entire family, including his son and wife Angela in his wife and everyone is smiling, everyone smiles even Robert who had just lost his 2 last work and who didn't want to smile, was smiling.

That is how I will remember Robert. Paul King of his noble happen with his family, Robert had and I am sure most others will too.

D M Green

Robert James Spencer Reynolds FRCR FRCS

Robert Reynolds died peacefully on 12 September 2000 following a family holiday in Ireland. Born in 1917 Robert was in the Royal Navy Medical Service when he volunteered for a physiotherapy course and in 1942 was one of six to be voluntarily accepting the course to become a member of the Chartered Society of Physiotherapists. He trained at The Field and Morris School of Physiotherapy Regents Park, London during the 1942 and in 1945, after completing 12 years service as Park Park Chief Petty Officer in the Royal Navy. Robert joined Queen Mary's Hospital for Children Cardiology Society as a physiotherapist.

In 1948 Robert became superintendent physiotherapist and continued at Queen Mary's Hospital, Cardiology for more than 30 years during this time he developed the physiotherapy paediatric service particularly in the areas of polio/myelomeningocele, cerebral palsy, rheumatoid, cystic fibrosis, and spinal injury. Special units were developed for each of these conditions a physiotherapy department to develop therapy, occupational skills and knowledge. Cardiology became a recognised centre for rheumatoid polyarthritis, rheumatism.

In the early 1950s Robert was a specialist in the treatment of poliomyelitis, he worked widely to recruit and qualified physiotherapists and published articles on various publications including the CSE journal. He also wrote the book, Physical Medicine in the Treatment of Poliomyelitis.

Robert Reynolds played an active role in the CSE and on others at both national and international level. In 1954 with Miss MacAlister MBBS he represented the Society at meetings in both Copenhagen and Stockholm which incorporated the WCPT and founded the first international Congress in London in 1955.

Robert retired in 1982 and in 1986 he was awarded Fellowship of the Chartered Society of Physiotherapy in recognition of his achievement of the profession of physiotherapy. In his time Robert suffered from pneumonia and unfortunately became blind, but he continued to enjoy the spoken word on radio, talking books and of course conversations.

Robert leaves a widow Phyllis and a surviving by his son and three daughters.

Selwyn Francis Taylor DSc MCCh FRCS

Selwyn Taylor who died on the 15th January 2000 was a highly respected and distinguished Endovascular surgeon who served during the war in the Royal Naval Reserve.

He was born in 1917, graduated Oxford/King's College Hospital in 1939 and was awarded the FRCS in 1940. He entered the RANR on 14 October 1940 as a Surgeon Lieutenant and was promoted Surgeon Lieutenant Commander on 30 September 1945.

His UK war service involved appointments to both the Royal Naval Hospital, Haslar and Plymouth and his overseas service included Australia, Newfoundland and the East Indies. He joined mainly in the Hammersmith Hospital from 1947 to 1978 but had stints in King's College Hospital 1951 to 1960. He subsequently became Director of the Royal Postgraduate Medical School.

He developed and expanded a profound interest in Endovascular surgery and was a founder-member of the International Association of Endovascular Surgeons. Later becoming its President, Selwyn was a supporter of large international meetings especially within the Endovascular community. He conducted a guide club to the province of his art and published frequently on its subject.

He served on the Council of the Royal College of Surgeons of England and was the Vice-President from 1979/80. For very many years he was Chairman, Committee on Surgery to the Royal Navy and regularly supplied standing committees and special events of the Royal Naval Medical Service, retaining a great affection for the Service.

Selwyn had a multitude of personal and private interests that included social history, sailing and playing tennis well over his retirement. Sadly his wife predeceased him. I am sure that many members of the Royal Naval Medical Service will call to mind him, particularly for his forthright, no-nonsense and professional support.

I L Jenkins

Dr Peter Gordon Jackson BSc FRCS, FRCS FRCPCH Emeritus Civil Consultant, a Consultant to the Royal Navy

Dr Peter Jackson BSc died on 15 January 2000 after a long illness. He was probably the leader Paediatric Association of Surgeons in this country. He learned surgery and with his colleagues developed the "Liverpool technique" which gained international acclaim for its reliability and quality of post-operative recovery. His appointments included Director of Paediatric Anaesthesia, Honorary of Liverpool and Consultant Anaesthetist to the Liverpool Children's and Adult Day Children's Hospitals. He was a past and a Member of the Board of Paediatric Anaesthetists of the Royal College of Surgeons and in 1993 he was elected to its Honorary Fellowship of the Royal Society of Medicine.

During the 1960s and 1970s Navy anaesthetists and technicians were seconded to the Adult Day Hospital to gain experience. Paediatric Anaesthetists and some others in experience was only to their own benefit. In this to the benefit of the many children who in those days were operated on in Naval Hospital at home and abroad.

From 1971 to 1998 he was Civil Consultant Anaesthetist to the Royal Navy and it was the that we could not know him well. He was known seriously a dedicated supporter of the Society of Naval Anaesthetists (SNA) to a healthy and a marriage by his two daughters and a little daughter of the Naval Anaesthetists. He was a clearly respected being, clearly at the front of meetings, often with his friend Professor Tim Gray. He was a kind and supportive figure in general terms of manner.

A calm, unassuming and modest man, he became a great friend to those of us who had the good fortune to know him.

His death will be a great loss to a very well-versed and devoted world and a very much missed our sympathy in his wife Betty herself, missed Liverpool Council of an earlier generation and to his children, James, Andrew, William and James.

APN & ER

Sadly has been involved of the death of Surgeon Commander Steven Dyer.

Our condolences go to his family and friends.

Boysen Sarah Clarke

Sarah Clarke died from breast cancer on the 14th of October 2009. Sarah was my wife and my life. Her children are still and I know she is constantly waiting for me. When she died she was content that she had led a full life and she was ready to go with the world. Her strength and courage have passed to her family, helping us through this period. When I remember Sarah, I always smile and I am lucky to have so many happy memories. Sarah never let her illness rule her thoughts or divert her from enjoying life with our family to the full.

Thirteen days before she died, Sarah had been working as a General Practitioner in Fulgton Road was a caring Doctor who related and communicated with all her patients. She had no friends, patients because she knew how to cure. She had an awful fear mice to give. The night she passed into her profession through an illness was not always positive, but the cure he received, especially from Nursing staff, was swift and thorough.

Following her treatment Sarah tried to devote time time to her art. She passed an art history at Oxford and developed her own individual

style. She exhibited in Glasgow and was keen to pursue this through further education. This was not to be but we have a great collection of her paintings made with us, our marriage. Living in Dorchester has evolved a dream for both of us so it is appropriate that one of Sarah's recent paintings is of the Royal Wootton Bassett. Following her death I wanted to put her art to good use and this painting has been reproduced as a limited edition print. 25% of the income from the sales of this will be donated to the Breast Cancer Campaign the remaining 25% will go to College charities. The print is reproduced below. Copies may be ordered from:

The College Shop
02090
Dorchester
Devon TQ1 0SD

Copies should be made payable to The Graham Fund

John Clarke
Sergeant Lieutenant Commander Royal Navy



Becket Sands, Charles

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Service News

The Royal Naval Medical Club Annual Dinner

The Blood and Deserves was held in the Old Naval College Grounds on 22 September 2000

In welcoming members of the RNM Medical Club and their guests to the Annual Dinner the Medical Director General (Naval) generously acknowledged the good representation of serving officers and others who had only recently joined the Medical List. It had been hoped that Admiral Sir Michael Boyce, First Sea Lord and Chief of the Naval Staff, would have been present but unfortunately he was forced elsewhere on duty. MDCG congratulated him, however, on behalf of the RNM Medical Club on the recent commencement of his appointment as the new Chief of the Defence Staff.

The Joint Principal Guests were distinguished Air Vice Marshal C J Morgan, Director General (Medical Services) (RAF) and Mr Gwyn Williams, the Managing Director of Manpower Company of Northern Cities. Gwyn Williams, President of the General Dental Council, Mr Arthur Webb, Chief Dental Officer for England and Wales and Mr David Hammond, Dean of the Faculty of Dental Surgery, Royal College of Surgeons and Adjunct to Medical School Surgery to the RNM.

King Charles II had ordered to build a great palace in Greenwich. Work on King Charles Block was halted by War but was much accelerated in 1694 when the work was now Queen Mary II subsequently proposed that the buildings be turned into a great hospital for soldiers to match that at Chelsea for sailors and work was continued by Nicholas Barbon (a pupil of Wren). It was in this Pumped Hall of Greenwich Hospital that the English seriously resisted to resist the new King George I on the 26th September 1714. The Hall was designed by Sir Robert Hooke and represents the courage of Britain over the French. It takes a magnificent tribute to the great founder of the Whig dynasty, King William III and makes a splendid symbolic statement of British self-confidence and ambition based on unshakable experience and sustained success. The Royal Naval College Greenwich has been opened in 1873.

The original dinner in the Pumped Hall was held only 40 years ago (1960) when King George VI was the Guest of Honour. We are therefore surrounded and overwhelmed by tradition & history and although this is no longer a Naval establishment, the splendour of the building remains unchanged. It is just as it always has been and I hope, as it will always be.

The tradition of inheriting it is passed into this new era before and as a Service we are dedicated to keeping up with time advances and are committed to ensuring the same standards of professional competence and commitment in our civilian colleagues. It is a pleasure to stand before you for a last year and talk briefly about how the Royal Naval Medical Service is developing within this rapidly changing climate.

Last year having been in my post for only 6 months I spoke of the necessity of the task we faced in re-establishing manpower status and operational capability.

I congratulated you for maintaining high standards of practice and clinical care for the Royal Navy and Royal Marines and talked about how we were tackling the constraints and demands imposed by the Strategic Defence Review and the DASH Strategy for the Future. I set out my aim to MDCG to represent the manpower and shall aim to ensure the discharge of our operational duties. These words will be familiar to RNM Officers as each of the medical director chair visited the flagships.

So for me tell you where and how we are progressing what we have to anticipate.

Operational

We have played a major part in many large UK and NATO exercises, BRIMST 91/92, ARGONAUT 93. Our key area has been the support to the operational aims of the Service. Sir John Lowe has provided the greatest boost of activity in most recent months. HMS Gannet again demonstrated its versatility and capacity powered by having the a short period on very FOT embarked. We have participated in deployments including British Maritime Islands Service, East Timor, Kosovo and Sierra Leone.

First Fleet

The proposal to integrate the Medical Directorate and the CINAFLANT Medical and Dental Division under MDCNS is moving ahead quickly. We have the approval of the Commander in Chief Fleet and I have recently engaged in highly productive talks with Deputy Commandant Fleet. I would like to complete the financial and organisational integration this year but will not work on London until later in a final note made by the remainder of the CINAFLANT HQ thereby avoiding unnecessary stress for one personnel. The long term vision is to see the MDCN HQ and Fleet Medical and Dental Division co-located.

Secondary care, growth

The 1999 Report called the primary care budget to be integrated under the single Service Medical Director General. Preliminary work on this has been done to identify the findings and gather input has been completed. The other top level design findings have given their approval for this change to be translated into their actions, and further work will commence shortly.

When aggregation occurs, establishments will be provided with the services they currently receive and are budgeted for. Commands that find will be reimbursed by an organisation and overseas MDCNs will be funded. I am an honest broker; my aim is to ensure the most cost effective and skilled delivery of health care to support the operational needs of the Naval Service. It will be a difficult task to achieve and maintain but the long term benefits far outweigh the short-term problems.

The Centre for Defence Medicine

Much has happened in a short time to advance the establishment of the CDM. The Service Level Agreement between the MOD and the University Hospital Birmingham MDR Trust is due for signature. 3 Greater and Regional appointments have been decided. The CDM will launch 1 Apr 2001 through-out will soon start to have already started. The prospect of taking full advantage of what Birmingham has to offer academically is potentially very exciting. It is the greatest intention to establish it as a focus for education and research for DAME. The functions of the Royal Defence Medical College will move in phases to CDM and will be crucial to its success.

The CDM is a critical new initiative in Defence Medicine and is undoubtedly the single biggest challenge facing the DAME in the coming years. It is not planned to make several state-wide visits and it certainly will not happen without considerable effort on the part of us all. I ask for your continued support, personal and many a debriefing has proven.

Secondary Care in the Portsmouth area

Arrangements for the launch of MDAH Portsmouth 1 Apr 2001 are on target but we without definition. Clinical services will continue to be provided in kind for Service & civilian patients but under Portsmouth Hospital National Health Service Trust (NHST) management after April. Service staff will have to continue to provide and provide to ensure the continuity of treatment for our personnel. NHST management difficulties include our transition from Surgeon Captain Laurel Jarvis, Commandant (Design) of the MDAH, to leading on the joint management planning with the Trust which will shortly have a new Chief Executive. He is clear in the scope of concern and much work is being progressed to ensure that the contract is signed on time and that the MDAH transition is a success.

One item of good news is that DSCA is leading to additional Supportive Unit at Queen Alexandra's Hospital that will open by the end of the year and allow the expansion of Category 1 Supportive Units again a facility lost with the privatisation and premature closure of Whiston ITU. This will reduce the spread so critical to a vital component of the work of RYMS and the training of young medical officers.

Widening the Initiative (WIDE)

The DSCA, like its NHS partners, is obliged to maintain Waiting List Clinical Standards to its Service customers, in our case CINAFLANT and CPM/Nothome. Managers consistently personal and do not guarantee that the personnel required for operational duties are given the appropriate priority for secondary care treatment. A lot of is required. Before this year CINAFLANT signed a scheme to end the waiting lists and target personnel specifically for operational duties. There are now two further WIDE.

- INJCNH is leading a scheme to ensure personnel to full clinic, within nine months, and in some cases who without contracts might be discharged from the Service through continuing. To date approximately 100 personnel have been identified for treatment.

• Next month a SO British initiative for all 3 services for the next 2 years will target those personnel requiring treatment who are claiming overwork in their units and branches.

Because these 2 measures we will able to improve the fitness and therefore, the fighting capability of the Naval Service.

DNA

I am in the process of developing research links with Birmingham. It has had a busy year so things, understandably increasing requirements for the Fleet as well as the regular demands for support to numerous nuclear deterrent operations, training and diving trials. It was for this reason that they were called only last month in response to the R/RSE, namely Captain Commander Peter Brown and Surgeon Lieutenant Commander Graeme Nicholson were deployed with the British police team to lend their vital knowledge and experience to the mission. It is a worthy achievement that they were not able to be at service but I am proud to know that they are no poorer experts than they. On a more immediate note, DNM, Assistant records section is fast moving towards Chapter Mark status and the House of the Historical Library located at IMM has been secured under the wings of the Admiralty Library. One recently completed research task was to identify a gender-free and related medical fitness test.

Common Terms and Conditions of Service

Since last year CMBRMS have become fully integrated into the RN and work together to coordinate LTOS for Doctors, Dentists and Nurses. It is hoped that arrangements that influence commitment and retention may be developed.

Fly

The Government's recognition of our commitment was reflected in the increased support in full of the AFPSB recommendations this year. I am not that my dental colleagues did not receive the financial recognition that they deserve and I hope that we can maintain this. The first Dentition Awards were paid this year and we will clearly be considerably this year's applications.

Medical Officer Reregulation

In the past 18 months 12 units have Dental Officers. Four for service and one member from the Army have entered the R/RSE waiting list

and are in waiting lists to achieve the two-year post target of 30 by April 04. Although a third of the target is the Dental Officers Medical Officers are achieving high levels towards completion in difficult and are used to be wary of making too many in any one specialty but we think the timing and consistent policies for our home grown doctors. That said, we have two very capable consultant surgeons and two equally capable less than Specialist Surgeons, (dental support) to join us by Christmas in addition to those referred to previously.

Retention

There is no doubt that split training in the DMS is second nature and there is a lack of the very healthy numbers of consultants who are applying to transfer to larger communities. All hospital specialties are well represented and it is particularly pleasing to see eight GPs in potential transfer applying for a MCC this year and a further five for FRC. Retaining GPs has been harder than before as they face the dilemma of whether to stay or go on completion of their training in a residential area without having to commit to a MCC. This remains one of our major challenges for the future.

GP

The quality of the GP training programme supervised by Surgeon Captain Noel Brown has been demonstrated by a highly commendable 100% pass rate by the six GPs who sat the MRCPGP examination this past year (including one with merit).

The initial agreement and acceptance of GPs has been long established, but further work is needed to fully meet the DMS's requirements. To this end Captain Brown and colleagues have introduced a GP Learning Folder. It is an interim system, the main document can be used for data entry and applications.

Dental

During the year there have been twenty academic awards for members of the Royal Naval Dental Branch and a further appointments to seven positions including consultancy in OMS. It has been a successful year with many dental units carrying it out and in support of local operations.

The Royal Naval Reserve

Surgeon Captain Mark Hoggan recently updated me on the state of the RNR medical cadre. All in all the RNR is in good shape. High quality officers have been appointed to Medical Detachments (currently) to ensure the highest professional reputation of the RNR as the RN's only RMR operations have already deployed in Former Republic of Yugoslavia and indeed Surgeon Captain Hoggan is leaving by exchange and is due to go out for a month in January.

Returning into the RNR Medical and Nursing Branches has also been highly successful over the past 12 months with the numbers expected by March 1999. I will take that opportunity to publicly reward my thanks to one of my long-serving officers, Lieutenant Mark Studd who has been extremely successful in recruiting and developing relations with the Reserve and doesn't shy to take up a new appointment at the Defence Medical Services Training Centre.

Personal

I have talked about the considerable amount of work and study being done by our few officers and have alluded to the numerous successes that they have attained. Much work goes into achieving outside the confines of their unit or establishment. However as in previous years the RMRs both regular and reserve had been well represented through professional and academic success and I wish to acknowledge the work that they have completed to achieve such successful completion items as:

Institution Virginia and Reserve Officership Award in the New Year and Birthday Honours List: Commander Jane Morley (QAENSR) - RSC Surgeon Captain John Maynard (RMR) - RSC to RSC Lieutenant Commander Jane Thomas (QAENSR) - RD Captain Patrick Brindley - ARSC (QAENSR) - QMS, Surgeon Commander Steve Taylor RN QMS, Lieutenant Commander Susan Greening (QAENSR) - ARSC, My David Richard CBE.

In conclusion

It has been a busy and prosperous year in that much has been achieved and the recognition of these achievements is made. While I can honestly say that the RMRs is moving in the right direction showing high standards in its ever more demanding environment, we should make ensure the rest of the world about of us. To maintain momentum takes a considerable effort.

to move further forward will take us even greater passion, focus and dedication. I am indebted to your support and I am privileged to be your Doctor.

MDGJ advised the members of the Royal Navy Medical Club to meet. Our thanks. Air Vice Marshal Stapples responded.

Royal Naval Medical Club - Enticing attractions to be noted in your diary

14 June 00

Cocktail Party

at MDGJ's in Marine Residence

21 September 00

Black Ball Dinner

venue to be notified

Naval Medical Competitions Fund

The Annual General Meeting of the Naval Medical Competitions Fund will take place at MDGJ on Tuesday 15 May 2001 at the Residence of the Medical Director General (Naval) at the Royal Hospital in Haslemere. Members wishing to attend are requested to submit the Attendance Secretary MMRP c/o MDGJ, Room 110, Victoria Building, HM Naval Base Portsmouth PO4 1LS (Tel 561 4000/27001 BT 02392 337400) in advance.

The Editor has had major problems with this, & thus, the paper is delayed as follows:

Dental Surgeon's Academic Achievements

Congratulations to

Surgeon Commander D. A. M. Kostas MSc in Periodontology

Surgeon Lieutenant Commander D. C. D. J. Griffin MSc in Conservative Dentistry (with distinction)

Surgeon Lieutenant Commander D. W. B. D. Church MSc in Faryoon Medicine (with distinction)

In Michigan Quater Commission

Surgeon Commander M. Errey

Surgeon Lieutenant Commander B. M. Rousar
R. M. Kauri

Surgeon Lieutenant Commander D. W. B. D. Church

Surgeon Lieutenant A. B. L. Allcock B. M.

Armstrong P. A. Johnson J. L. Gendron D. C.

Erwin M. P. Harty S. D. Heston A. D. R. Heston J.

F. R. Heston S. T. Low-Chen S. J. Martin M. Martin

P. T. Marshall R. A. Miller W. D. Miller R. K. J.

Price J. J. Smith S. J. Whitten

Surgeon Lieutenant D. A. J. Heston

Lieutenant K. J. Heston S. J. Heston

PLACED ON THE RETIREE LIST

Surgeon Captain D. J. V. Moffatt

ROYAL NAVAL MEDICAL, DENTAL & QUARTER OFFICERS

COMMISSION TRANSFERS

In Full Career Commission

Surgeon Commander D. B. S. Smith

Surgeon Lieutenant Commander D. C. S. Blum, A.

M. Rousar, M. D. Heston, D. A. Heston, R.

Miller E. A. Nichols A. C. Palmer J. N. Heston

Surgeon Lieutenant Commander D. T. B. Heston

Lieutenant Commander N. J. Heston C. A. Heston

NEW ENTRIES

Surgeon Lieutenant D. C. L. Sorrell

R. C. H. Heston

Surgeon Staff Lieutenant D. M. S. Heston

R. C. H. C. Heston

Medical Squadron personnel securing their commendation from Major General R Padua, Commander General Royal Marines. From left to right:

MA Carl Wain, CFORMA David Pickering, CDRMA PCOMA Andrew Headley, Surgeon Lt Russ Allrop

During Exercise Eagle Star in Egypt, Medical Squadron Commander Legation, Regiment Royal Marines were called to assist with a Road Traffic Accident at 1100 on 18 October 1999. Three men of rank on the road in Mataria Military City. The Regiment dispatched the Medical Officer and three Medical Assistants. On arrival in the accident scene, 10 minutes later a vehicle was found on its tyre spins down on the road having lost a wheel. All seven of the occupants were found outside the vehicle.

Surgeon Lt Allrop conducted an on-scene triage and casualties in priority one and two priority in priority two and the remainder in

priority three and directed his team to apply first aid accordingly. He himself attended both of the priority one casualties, initially resuscitating and stabilising an injured Egyptian man who had suffered from a serious pelvic fracture and a fractured right femur requiring urgent life saving intervention. He then treated PCOMA Pickering (now CFORMA) in providing him with a urinary catheter to the second priority one casualty who had a serious head injury.

LMA (now PCOMA) Headley and MA Wain assisted the SMO and PCOMA in treating and stabilising the casualties before they were evacuated to the American base hospital in Ismailia Military City.

All of the casualties recovered and subsequently made good recoveries. The quick clinical and professional action demonstrated by Medical Squadron personnel undoubtedly contributed greatly to the achievement and set a credit to themselves, the Royal Navy and the British Forces who served during Exercise Eagle Star.



W14 and W16 - CFORMA David Pickering, CDRMA PCOMA Andrew Headley, Surgeon Lt Russ Allrop

Administration Notices

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The Journal of the Royal Naval Medical Service is intended for the publication of documents, full and preliminary reports of original research work by members or related to the work of the Service, review and discussion papers of operational, and other aspects of naval medicine or its history, case reports, study reports, letters to the Editor from members, Service news including naval and sports reports, and obituaries.

All manuscripts should be submitted to the Editor, RNMSc, Moorhouse House, Institute of Naval Medicine, Admiralty Compound, White, PO12 2DL. Each author must sign the covering letter as evidence of consent to publish. One author must be identified and understood to receive editorial comment and to approve proofs.

Unless specifically stated to the contrary, no submission (paper or accepted on the understanding that they are contributed solely to this journal) has material previously published should be accompanied by the written consent of the copyright holder to re-publication. For dissemination of titles an acknowledgement should be included in the captions and a full reference provided.

Manuscripts for consideration may be submitted to the following journals. The Editor reserves the customary right to style and, if necessary, to shorten material accepted for publication, or other papers to achieve consistency in terminology and to suggest alterations.

Authorship

Authorship credit should be based only on substantial contributions to the conception and design or analysis and interpretation of data, and to the drafting the article or revising it substantially for important intellectual content, and on approval of the version to be published. Contributors (as the individual) must all be named. Participants who do not contribute to the conception or interpretation of data do not qualify authorship. If requested, authors shall produce the documentation which the university is based for consideration by the Editor.

Editor

Presentations are to be taken in person or the suitability of papers is sent and determined, e.g. by sending the text as a photograph. Where a poster is subject might be discussed freely in discussion or from the text, in a written form written presentation is obtained from the patient and forwarded with the manuscript. Reports of experiments on human subjects will not be considered unless the protocol was approved by an appropriate ethics committee and followed, and the authors state explicitly that each subject gave his or her informed written consent. A copy of the letter of approval issued by the ethics committee must be provided.

Preparation of manuscript

Manuscripts must be in English in a form suitable for publication as appears oral presentation. Suitable papers should be prepared with no discussion of the hypothesis, experiment and findings. The text should not exceed 150 words. Findings within the text should be cited in English in the context of different sections. Where possible, manuscripts should be prepared in English as an Appendix B.1 and submitted as B.2 each page 400 characters. They should be appropriate in content, spacing on one side of A4 paper. The author should submit a copy of the full manuscript.

Title page

The title page should contain a concise, informative title, up to five key words, the author and title of all authors and the appropriate and the Department of Medicine (College of Physicians) where the work was carried out.

Tables and illustrations

Tables and illustrations (figures) should not be in the paper copies but only appearing in electronic presentation in the text. Each table and illustration should be on its individual page separate from the text, be numbered in two distinct sequences in the order in which they are mentioned in the text, and have an explanatory caption (typed on a separate sheet for illustrations).

New photographs of scientific, social, sport or other occasions involving members of the Royal Naval Medical Service are welcomed.

Normally printed illustrations will be microfilm. The values of the films should be single where values are shown in a single or highly variable. Photographs must be of good quality, glossy, uncut and be provided in original ready form with uncut areas around all. The figure number must be clear and legible should be marked on the back. Line drawings should be professionally drawn and finished in all aspects that standard and technical in photograph form, or high quality photographs. Printing and handling should be sufficiently large to ensure legibility after processing for publication. Printed lettering must be legible.

Measurements and abbreviations

Measurements should be given in SI units in which they were made, but, with the exception of blood pressure in mmHg and haemoglobin concentration in g/dl and serum urea that be accompanied by mmHg (SI equivalent). The approved units of drugs should be used (synonyms must only follow in parentheses). If an abbreviation is used, the unit for which it stands should be given, as full as first mention in the text, e.g. Institute of Naval Medicine (INM).

References

References for the accuracy and completeness of references lies with the author(s) and these will not be checked by editorial staff. Only essential references should be included and authors should verify their copies of original documents. References are identified in the text by superscript Arabic numerals and are numbered and listed consecutively in the end of the manuscript in the order in which they are first cited in the text. A list of references should be given at the end of the paper using the form of reference adapted by factor 1000. Papers not yet published should be indicated in the references as follows: (in press). Those in preparation (including any submitted for publication), personal communications and unpublished observations should be indicated in the text as (in press only).

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